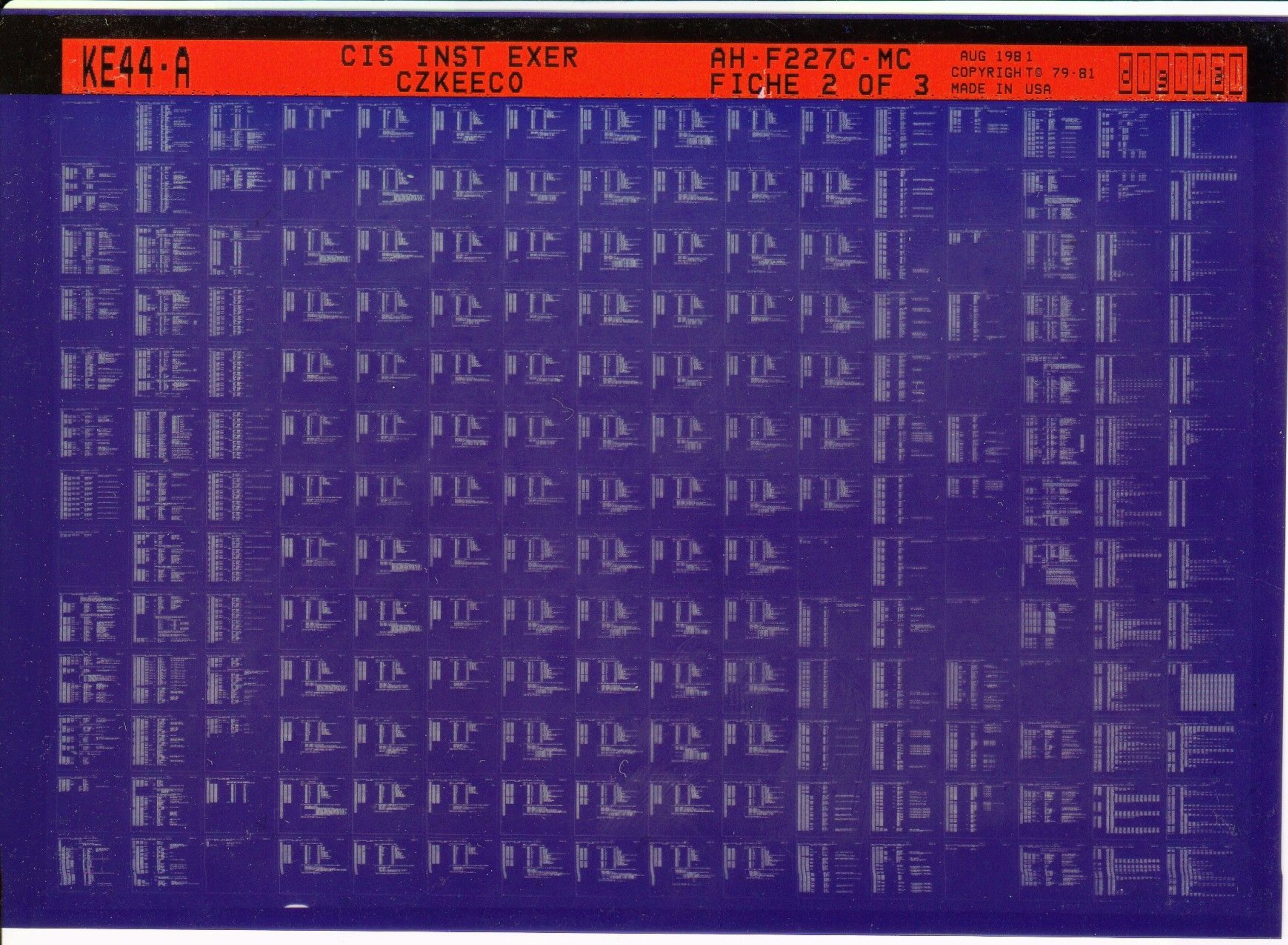
KE44-A CIS INST EXER AH-F227C-MC AUG 1981
CZKEECO FICHE 1 OF 3 COPYRIGHT@ 79-81
MADE IN USA

KE44-A

CIS INST EXER
CZKEECO

AH-F227C-MC
FICHE 2 OF 3

AUG 1981
COPYRIGHT© 79-81
MADE IN USA



KE44-A

CIS INST EXER
CZKEECO

AH-F227C-MC
FICHE 3 OF 3

AUG 1981
COPYRIGHT© 79-81
MADE IN USA

```
5630
5632
5633
5634
5635
5636
5637
5638
5639
5640
5641
5642
5643
5644
5645
5646
5647
5648
5649
5650
5651
5652
5653
5654
5655
5656
5657
5658
5659
5660
5661
5662
5663
5664
5665
5666
5667
5668
5669
5670
5671
5672
5673
5674
5675
5676
5677
```

.REM &

IDENTIFICATION

PRODUCT CODE: AC-F226C-MC

PRODUCT NAME: CZKEECO PDP-11 CIS INST EXERCISER

DATE: APRIL, 1981

MAINTAINER: BASE SYSTEMS DIAGNOSTIC ENGINEERING

THE INFORMATION IN THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE AND SHOULD NOT BE CONSTRUED AS A COMMITMENT BY DIGITAL EQUIPMENT CORPORATION. DIGITAL EQUIPMENT CORPORATION ASSUMES NO RESPONSIBILITY FOR ANY ERRORS THAT MAY APPEAR IN THIS DOCUMENT.

NO RESPONSIBILITY IS ASSUMED FOR THE USE OR RELIABILITY OF SOFTWARE ON EQUIPMENT THAT IS NOT SUPPLIED BY DIGITAL OR ITS AFFILIATED COMPANIES.

COPYRIGHT (C) 1979, 1981 BY DIGITAL EQUIPMENT CORPORATION

THE FOLLOWING ARE TRADEMARKS OF DIGITAL EQUIPMENT CORPORATION:

DIGITAL	PDP	UNIBUS	MASSBUS
DEC	DECUS	DECTAPE	

```
5679
5680                                    TABLE OF CONTENTS
5681                                    -----------------
5682
5683
5684                            1.0     GENERAL INFORMATION
5685
5686                                    1.1     PROGRAM ABSTRACT
5687                                    1.2     SYSTEM REQUIREMENTS
5688                                    1.3     RELATED DOCUMENTS AND STANDARDS
5689                                    1.4     DIAGNOSTIC HIERARCHY PREREQUISITES
5690                                    1.5     ASSUMPTIONS
5691
5692                            2.0     OPERATING INSTRUCTIONS
5693
5694                                    2.1     LOADING AND STARTING PROCEDURES
5695                                    2.2     SPECIAL ENVIRONMENTS
5696                                    2.3     PROGRAM OPTIONS
5697                                    2.4     EXECUTION TIMES
5698
5699                            3.0     ERROR INFORMATION
5700
5701                            4.0     PERFORMANCE AND PROGRESS REPORTS
5702
5703                                    4.1     PERFORMANCE REPORTS
5704                                    4.2     PROGRESS REPORTS
5705
5706                            5.0     REVISION HISTORY
5707
5708                            6.0     PROGRAM TABLE OF CONTENTS
```

```
5710
5711
5712                    1.0 GENERAL INFORMATION
5713                    -----------------------
5714
5715                    1.1 PROGRAM ABSTRACT
5716                    --------------------
5717
5718                        THE CIS INSTRUCTION EXERCISER TESTS ALL CIS INSTRUCTIONS IN BOTH
5719                        REGISTER AND IN-LINE MODES.  EACH INSTRUCTION IS TESTED USING ALL
5720                        COMBINATIONS OF OPERAND DATA TYPES, IN EACH OF THE THREE POSSIBLE
5721                        PROCESSOR MODES (USER, SUPERVISOR, KERNEL), WITH MEMORY MANAGEMENT
5722                        ENABLED/DISABLED ,WITH D-SPACE ENABLED/DISABLED, IN AN INTERRUPT
5723                        ENVIRONMENT, FOR MANY CASES OF STRING LENGTH, STRING ADDRESS AND
5724                        STRING DATA.
5725
5726                        THIS PROGRAM IS NOT DIRECTED AT ANY ONE CIS HARDWARE IMPLEMENTATION
5727                        BUT RATHER IS INTENDED TO PROVIDE THOROUGH INSTRUCTION
5728                        EXERCISING FOR ALL PDP-11 CIS PROCESSORS.
5729
5730                    1.1.1 STRUCTURE OF PROGRAM
5731                    --------------------------
5732
5733                        THIS DIAGNOSTIC OCCUPIES 28K WORDS OF MEMORY AND IS COMPATIBLE WITH
5734                        XXDP, ACT AND APT.  IT CAN BE RUN STANDALONE UNDER XXDP, AND CAN BE CHAINED
5735                        UNDER XXDP, ACT AND APT  (REFERENCE XXDP USERS MANUAL FOR
5736                        DETAILS OF CHAINING PROCEDURE).
5737
5738                        THIS PROGRAM SETS UP FOR AND EXECUTES ONE CIS INSTRUCTION AT A TIME
5739                        AND THEN COMPARES RESULTS WITH EXPECTED RESULTS.  ERROR MESSAGES IDENTIFY
5740                        ALL OPERANDS AND STRING DATA ASSOCIATED WITH THE FAILING INSTRUCTION
5741                        TEST CASE.  THE PROGRAM IS STRUCTURED AS A SINGLE COMPLEX
5742                        LOOP WHICH GETS REEXECUTED ONCE FOR EACH INSTRUCTION TEST CASE.
5743                        INSTRUCTION OPERANDS FOR EACH TEST CASE ARE EITHER EXTRACTED
5744                        FROM INPUT TABLES OR GENERATED USING A RANDOM NUMBER GENERATOR.
5745                        EXPECTED RESULTS ARE COMPUTED IN THE LOOP BY EMULATING CIS
5746                        INSTRUCTIONS USING THE BASIC PDP-11 INSTRUCTIONS.
5747
5748                    1.1.2 DIAGNOSTIC INFORMATION
5749                    ----------------------------
5750
5751
5752                    1.2 SYSTEM REQUIREMENTS
5753                    -----------------------
5754
5755                    1.2.1 HARDWARE REQUIREMENTS
5756                    ---------------------------
5757
5758                        PDP-11 PROCESSOR (WITH CIS CAPABILITY) WITH 28K OR MORE OF MEMORY
5759                        CONSOLE DEVICE (LA30,LA36,VT50,ETC.)
5760                        PROGRAM LOAD DEVICE (PAPER TAPE, APT, ACT, DISK, MAGTAPE, ETC)
5761                        OPTIONAL HARDWARE:
5762                                1 OR 2 KW11-P PROGRAMMABLE REAL TIME CLOCKS
5763                                1 MHZ OSCILLATOR
```

1.2.2 SOFTWARE REQUIREMENTS

1.3 RELATED DOCUMENTS AND STANDARDS

XXDP USERS MANUAL
DEC STANDARD 168 (PDP11 EXTENDED INSTRUCTIONS)

1.4 DIAGNOSTIC HIERARCHY PREREQUISITES

ALL BASE PROCESSOR DIAGNOSTICS AND THE CIS DIAGNOSTIC SHOULD BE RUN ERROR FREE BEFORE ATTEMPTING TO EXECUTE THIS CIS INSTRUCTION EXERCISER.

1.5 ASSUMPTIONS

THE HARDWARE OTHER THAN THE SUBSYSTEM BEING TESTED IS ASSUMED TO WORK PROPERLY. FALSE ERRORS MAY BE REPORTED IF THE PROCESSOR, MEMORY, ETC., DO NOT FUNCTION PROPERLY.

2.0 OPERATING INSTRUCTIONS

2.1 LOADING AND STARTING PROCEDURES

2.1.1 LOADING PROCEDURES

THIS PROGRAM MAY BE LOADED FROM PAPER TAPE USING THE ABSOLUTE LOADER. IT MAY ALSO BE LOADED FROM ANY XXDP LOAD MEDIA. THE PROGRAM IS BOTH APT AND ACT COMPATIBLE AND CAN BE DOWN LINE LOADED INTO THE SYSTEM UNDER TEST FROM THE APT OR ACT HOST PROCESSOR.

2.1.2 STEPS FOR QUICK AND SIMPLE EXECUTION

THE DIAGNOSTIC CAN BE EXECUTED STANDALONE WITHOUT READING THE REMAINDER OF THIS DOCUMENT, AS FOLLOWS:

A) LOAD THE DIAGNOSTIC
B) START AT ADDRESS 200
G) GET END OF PASS MESSAGES OR ERROR MESSAGES

2.1.3 STARTING PROCEDURE

```
5818
5819                                    THE NORMAL PROGRAM STARTING ADDRESS IS 200.  AN OPTIONAL STARTING
5820                                    ADDRESS (204) PROVIDES FOR USER SELECTION OF INSTRUCTION(S) TO
5821                                    TEST AND USER CONTROL OVER TEST ENVIRONMENT. AN OPTIONAL
5822                                    STARTING ADDRESS (210) PROVIDES A QUICK VERIFY (ONLY) MODE TAILORED
5823                                    TO THE PROCESSOR TYPE UNDER TEST TO RUN IN LESS THAN 5 MINUTES
5824                                    PER PASS AND PROVIDE A FAIR LEVEL OF MICROCODE COVERAGE (>80%).
5825
5826                                    STARTING ADDRESS = 200
5827                                    ----------------------
5828
5829                                    STARTING AT ADDRESS 200 RESULTS IN EXECUTION OF THE STANDARD
5830                                    TEST SEQUENCE.  A QV PASS IS RUN FIRST (SUBSET OF ALL TABLED TEST CASES).
5831                                    THIS QV PASS IS FOLLOWED BY A END OF QV PASS INDICATION.
5832                                    THEN ALL TABLED TEST CASES FOR ALL INSTRUCTIONS
5833                                    ARE EXECUTED (APPROX 30 MINUTES) FOLLOWED BY
5834                                    AN END OF PASS INDICATION.  TESTING THEN PROCEEDS IN A RANDOM
5835                                    MODE UNTIL THE OPERATOR TERMINATES EXECUTION.
5836
5837                                    CIS INSTRUCTION INTERRUPTABILITY IS EXERCISED PROVIDED THE
5838                                    SYSTEM UNDER TEST HAS A LINE TIME CLOCK (KW11-L TYPE).
5839
5840                                    PROCESSOR MODE (KERNEL,SUPERVISOR,USER) IS SELECTED RANDOMLY
5841                                    PRIOR TO EXECUTION OF EACH CIS INSTRUCTION TEST CASE. MEMORY MANAGEMENT
5842                                    IS ENABLED WITH THE D-SPACE ENABLE/DISABLE STATE
5843                                    SELECTED RANDOMLY PRIOR TO EACH TEST CASE.  MODE IS SWITCHED TO
5844                                    THE TEST MODE AND MEMORY MANAGEMENT IS TURNED ON JUST PRIOR TO
5845                                    EXECUTION OF THE CIS INSTRUCTION UNDER TEST.  DURING INTERRUPT
5846                                    SERVICE AND IMMEDIATELY FOLLOWING THE COMPLETION
5847                                    OF THE CIS INSTRUCTION EXECUTION THE MODE IS SWITCHED BACK
5848                                    TO KERNEL AND MEMORY MANAGEMENT IS SHUT OFF.
5849
5850                                    TABLED TEST CASES ARE EXHAUSTED FOR A GIVEN INSTRUCTION BEFORE PROCEEDING
5851                                    TO TEST THE NEXT CIS INSTRUCTION.  AT THE START OF EACH NEW
5852                                    INSTRUCTION (NON-RANDOM MODE) A MESSAGE IS DISPLAYED AS A
5853                                    PROGRESS INDICATOR IDENTIFYING THE CIS INSTRUCTION UNDER TEST.
5854                                    A 'CONTROL T' ENTERED AT ANY TIME WILL CAUSE THE PROGRAM TO
5855                                    DISPLAY THE INSTRUCTION UNDER TEST AND THE CURRENT INSTRUCTION
5856                                    COUNT.  THE FOLLOWING LIST IDENTIFIES THE ORDER IN
5857                                    WHICH INSTRUCTIONS ARE TESTED (NON-RANDOM MODE) AND THE
5858                                    APPROXIMATE NUMBER OF TESTS EXECUTED FOR EACH INSTRUCTION
5859                                    (AFTER THE QV PASS).
5860
5861                                            INSTRUCTION             # OF TESTS
5862                                            -----------             ----------
5863
5864                                            L2D                     8
5865                                            L3D                     8
5866                                            MOVC                    354
5867                                            LOCC                    36
5868                                            CMPC                    362
5869                                            MOVRC                   354
5870                                            MOVTC                   354
5871                                            SKPC                    30
```

```
                                        MATC                    904
                                        SCANC                   126
                                        SPANC                   126
                                        CVTPN                   226
                                        CVTNP                   568
                                        CVTLP                   170
                                        CVTLN                   323
                                        CVTPL                   53
                                        CVTNL                   99
                                        ADDP                    1970
                                        ADDN                    3872
                                        SUBP                    1970
                                        SUBN                    3746
                                        CMPP                    502
                                        CMPN                    1089
                                        ASHP                    1972
                                        ASHN                    3872
                                        MULP                    1993
                                        DIVP                    1973


                                AFTER BEING STARTED AT LOCATION 200 THE PROGRAM SHOULD
                                RESPOND AS FOLLOWS:

                                        CZKEEC0 PDP-11 CIS INSTRUCTION EXERCISER
                                        QUICK VERIFY PASS TIME: LESS THAN 5 MINUTES
                                        L2D0    INST CT: XX XXXXX
                                                  .
                                                  .
                                                  .
                                        DIVP    INST CT: XX XXXXX
                                        END OF QUICK VERIFY PASS
                                        INST UNDER TEST WILL BE DISPLAYED .....
                                        PASS TIME:   APPROX. 30 MIN
                                        L2D0    INST CT: XX  XXXXX
                                                  .
                                                  .
                                                  .
                                        DIVP    INST CT: XX  XXXXX
                                        END OF PASS (EXECUTION OF TABLED TEST CASES COMPLETE)
                                        ENTERING RANDOM TEST MODE
                                        NO FURTHER END OF PASS MESSAGES WILL BE ISSUED
                                        RANDOM # GENERATOR SEED CONSTANTS WILL BE PRINTED
                                                EVERY 1024 CIS INSTRUCTION TESTS
                                        RANDOM # GENERATOR SEED  XXXXXX  XXXXXX  XXXXXX
                                                          .
                                                          .
                                                          .
                                                          .
                                           (UNTIL PROGRAM EXECUTION IS TERMINATED BY USER)


                                THE INSTRUCTION COUNT DISPLAYED AT THE START OF TESTING FOR
                                EACH INSTRUCTION IS CUMULATIVE FROM THE FIRST L2D0 CIS INSTRUCTION
```

```
5926                    TESTED.  THE LOWER 5 DIGIT COUNT GETS INCREMENTED ONCE PER CIS
5927                    INSTRUCTION TEST (I.E. ONCE PER CIS INSTRUCTION EXECUTED)
5928                    AND COUNTS FROM 0 TO 65,535 (DECIMAL).  THE UPPER 2
5929                    DIGIT COUNT GETS INCREMENTED ONCE PER 65,535 TESTS.  THE
5930                    INSTRUCTION COUNT IS ZEROED AT THE START OF RANDOM MODE
5931                    TESTING.  CONTROL T MUST BE USED TO DISPLAY THE INSTRUCTION COUNT
5932                    IN RANDOM MODE.
5933
5934                    IN XXDP CHAIN AND ACT CHAIN MODE TESTING TERMINATES AFTER
5935                    THE END OF PASS INDICATION AND CONTROL IS RETURNED TO THE
5936                    RESPECTIVE MONITOR.  RANDOM MODE IS NOT ENTERED IN THESE CHAIN
5937                    MODES.  RANDOM TEST MODE IS ENTERED AUTOMATICALLY IN ALL OTHER
5938                    ENVIRONMENTS (STANDALONE,XXDP MANUAL,ACT DUMP,APT).
5939
5940                    THE RANDOM # GENERATOR SEED CONSTANTS ARE DISPLAYED TO PERMIT
5941                    THE USER TO STOP AND LATER RESUME RANDOM TESTING FROM THE
5942                    TERMINATION POINT.  THIS IS EXPLAINED BELOW UNDER
5943                    THE HEADING ''STARTING ADDRESS = 214''.
5944
5945                    STARTING ADDRESS = 204
5946                    ----------------------
5947
5948                    STARTING AT ADDRESS 204 REQUIRES THE OPERATOR TO RESPOND
5949                    TO QUESTIONS TO SELECT INSTRUCTION(S) FOR TEST, TEST
5950                    MODE, AND TEST ENVIRONMENT.
5951
5952                    AFTER BEING STARTED AT LOCATION 204 THE PROGRAM SHOULD
5953                    RESPOND AS FOLLOWS:
5954
5955                            CZKEEC0 PDP-11 CIS INSTRUCTION EXERCISER
5956                            TEST INTERRUPTABILITY OF CIS INSTRUCTIONS (Y OR N)?
5957                            RANDOM EXERCISE MODE (Y OR N)?
5958                            ENTER INSTRUCTION TO TEST <ALL>
5959
5960                    IF THE USER ANSWERS YES (Y) TO THE INTERRUPTABILITY QUESTION
5961                    THE PROGRAM WILL PROMPT FOR WHAT INTERRUPT SOURCE TO USE (LTC- LINE TIME CLOCK,
5962                    KW11-P @ 100KHZ,KW11-P @10KHZ, KW11-P WITH EXTERNAL 1 MHZ OSCILLATOR).
5963                    IF THE LTC IS SELECTED, THE PROGRAM CONTROLS INTERRUPT TIMING
5964                    TO ASSURE THAT MOST CIS INSTRUCTIONS ARE INTERRUPTED ONCE.
5965                    IF THE KW11-P WITH A 1 MHZ EXTERNAL OSCILLATOR IS SELECTED,
5966                    EACH CIS INSTRUCTION WILL BE INTERRUPTED AND FORCED TO SUSPEND
5967                    EXECUTION AT ALL POSSIBLE SERVICE EXIT POINTS. USE OF THE
5968                    P-CLK WILL GREATLY INCREASE RUN TIME.
5969
5970                    IF EITHER THE KW11-P @100KHZ OR THE KW11-P WITH EXTERNAL
5971                    OSCILLATOR IS SELECTED, THE PROGRAM WILL ASK WHETHER
5972                    OR NOT TO ALLOW AN INTERRUPT DURING THE CIS INST (DIVP - STATE DISTURBING
5973                    INSTRUCTION) NORMALLY EXECUTED WITHIN THE KW11-P INTERRUPT
5974                    SERVICE ROUTINE.
5975
5976                    IF THE USER ANSWERS YES (Y) TO THE RANDOM EXERCISE MODE QUESTION,
5977                    MEMORY MANAGEMENT TEST STATE, PROCESSOR TEST MODE,
5978                    TEST OPERANDS AND STRING DATA FOR EACH CIS INSTRUCTION
5979                    TEST WILL BE DERIVED USING A RANDOM NUMBER GENERATOR.  A
```

```
                                NO (N) ANSWER WILL CAUSE EXECUTION OF CIS INSTRUCTION
                                TESTS WITH ALL TEST OPERANDS AND STRING DATA PROVIDED
                                FROM PROGRAM INPUT AND PARAMETER TABLES. FOLLOWING A (N) RESPONSE,
                                THE PROGRAM WILL PROMPT FOR PROCESSOR TEST MODE
                                (KERNEL,SUPERVISOR,USER) AND MEMORY MANAGEMENT TEST STATE
                                (OFF,ON WITH D SPACE ENABLED, ON WITH D SPACE DISABLED).

                                THE LAST QUESTION ENABLES THE USER TO SELECT ONE OR ALL CIS
                                INSTRUCTIONS FOR TEST.  TO SELECT A SINGLE INSTRUCTION FOR TEST
                                ENTER THE NMEUMONIC FOR THE DESIRED INSTRUCTION FROM THE INSTRUCTION
                                LIST ABOVE.  THE SAME QUESTION WILL BE REASKED IF THE INSTRUCTION
                                IS INCORRECTLY ENTERED.  TO SELECT ALL CIS
                                INSTRUCTIONS FOR TEST (THE DEFAULT CASE) SIMPLY RESPOND WITH
                                A CARRIAGE RETURN.

                                IF THE RANDOM MODE QUESTION IS ANSWERED YES (Y) AND THE INSTRUCTION(S)
                                FOR TEST IS ANSWERED 'ALL', THE ACTUAL INSTRUCTION UNDER
                                TEST ON ANY GIVEN TEST WILL BE SELECTED AT RANDOM.

                                STARTING ADDRESS = 210
                                ----------------------

                                STARTING AT ADDRESS 210 PROVIDES REPETITIVE QUICK VERIFY PASSES.
                                NOTE THAT THE QV PASS IS  DESIGNED TO
                                GIVE A FAIR LEVEL OF MICROCODE COVERAGE (>80%) IN LESS
                                THAN 5 MINUTES PER PASS.

                                THIS QV MODE RESULTS IN EXECUTION OF A SUBSET OF THE TABLED
                                TEST CASES.  THE SUBSET HAS BEEN VERIFIED TO PROVIDE AT LEAST
                                THE DESIRED 80% LEVEL OF COVERAGE.  NOTE, THE SUBSET OF TABLED TEST
                                CASES THAT GETS RUN IN QV MODE VARIES WITH PROCESSOR TYPE.  ALSO
                                NOTE THAT SOME CIS INSTRUCTIONS MAY NOT BE EXECUTED AT ALL
                                IN QV MODE BECAUSE IT HAS BEEN DETERMINED THAT DUE TO COMMON
                                ROUTINES WITHIN THE MICROCODE IMPLEMENTATION IT IS POSSIBLE
                                TO GET THE 80% COVERAGE WITHOUT EXERCISING ALL INSTRUCTIONS.

                                THE INSTRUCTION COUNTS LISTED UNDER THE NORMAL RUN MODE
                                (STARTING ADDRESS 200) ABOVE DO NOT APPLY IN QV MODE.

                                CIS INSTRUCTION INTERRUPTABILITY IS EXERCISED PROVIDED THAT
                                THE SYSTEM UNDER TEST HAS EITHER A LINE TIME CLOCK OR A
                                PROGRAMMABLE REAL TIME CLOCK (KW11-P).

                                PROCESSOR TEST MODE(KERNEL,SUPERVISOR, USER) AND MEMORY MANAGEMENT
                                TEST STATE ARE SELECTED RANDOMLY AS IN THE 'STARTING ADDRESS = 200'
                                SECTION ABOVE.

                                AFTER BEING STARTED AT LOCATION 210, THE PROGRAM SHOULD RESPOND
                                AS FOLLOWS:

                                        CZKEAA0 PDP-11 CIS INSTRUCTION EXERCISER
                                        QUICK VERIFY PASS TIME:  LESS THAN 5 MINUTES
                                        L2D0    INST CT: XX XXXXX
                                                .
```

```
6034
6035
6036                                        DIVP    INST CT: XX XXXXX
6037                                        END OF QUICK VERIFY PASS
6038
6039                                    RANDOM MODE EXERCISING IS NOT INVOKED DURING A QUICK VERIFY
6040                                    PASS.
6041
6042                                    STARTING ADDRESS = 214
6043                                    ----------------------
6044
6045                                    STARTING AT ADDRESS 214 ALLOWS THE USER TO MODIFY RANDOM
6046                                    NUMBER GENERATOR SEED CONSTANTS. THIS IS DESIRABLE IN 2
6047                                    SITUATIONS.
6048
6049                                    IF THE USER DESIRES TO RUN IN RANDOM TEST MODE FOR
6050                                    VERY LONG PERIODS OF TIME (DAYS, WEEKS, ETC), THE RANDOM
6051                                    NUMBER GEN. SEED CONSTANTS PRINTED EVERY 1024 TESTS PROVIDE
6052                                    FOR STOPPING AND LATER CONTINUING WITHOUT REPEATING PRIOR
6053                                    TESTS RUN. (REMEMBER THAT THE RANDOM # GENERATOR USED IS
6054                                    PSEUDO RANDOM - I.E. THE SAME SEQUENCE OF RANDOM TESTS IS
6055                                    EXECUTED EVERY TIME THE PROGRAM IS RESTARTED FROM THE
6056                                    BEGINNING).
6057
6058                                    THE SEED CONSTANTS ARE ALSO DISPLAYED WITH THE STANDARD
6059                                    ERROR REPORT.  THIS PERMITS THE USER TO START WITH THE
6060                                    FAILING TEST AT SOME FUTURE TIME.
6061
6062                                    AFTER STARTING AT 214 THE PROGRAM QUERIES FOR RANDOM
6063                                    NUMBER SEED CONSTANTS:
6064
6065                                            ENTER THE 3 RANDOM NUMBER GEN. SEED CONSTANTS:
6066
6067                                    AFTER THE THIRD SEED IS ENTERED THE PROGRAM WILL CONTINUE
6068                                    AS IF STARTED AT 204.  ANSWER YES TO THE RANDOM EXERCISE
6069                                    MODE QUESTION AND <CR> TO THE ENTER INST TO TEST QUESTION.
6070                                    THE FIRST TEST EXECUTED WILL BE GENERATED USING THE NEW
6071                                    SEEDS.
6072
6073
6074                            2.2 SPECIAL ENVIRONMENTS
6075                                ---------------------
6076
6077                                    APT  -  THE CIS INSTRUCTION EXERCISER IS FULLY APT COMPATIBLE.
6078                                            HOWEVER ITS OPERATION UNDER APT IS SOMEWHAT DIFFERENT
6079                                            THAN THAT OF OTHER DIAGNOSTICS.  THE FIRST 2 PASSES UNDER
6080                                            APT ARE IDENTICAL TO THE TESTS RUN IN STANDALONE
6081                                            - 1 QV PASS AND 1 FULL TABLED TEST CASE PASS.
6082                                             SUBSEQUENT PASSES ARE NOT IDENTICAL
6083                                            TO THE 2ND PASS BUT RATHER BLOCKS OF 20,000
6084                                            (OCTAL) RANDOM MODE TEST CASES. THAT IS, EACH PASS
6085                                            (BEYOND THE FIRST) IS A UNIQUE SET OF RANDOM CIS
6086                                            INSTRUCTION TEST CASES.
6087
```

```
6088                                    THE INFORMATION RECORDED (AND SUBSEQUENTLY DISPLAYED)
6089                                    BY APT ON ERROR INCLUDES TEST NUMBER AND FATAL ERROR
6090                                    NUMBER.  THE FATAL ERROR NUMBER SHOULD BE INTERPRETED AS
6091                                    FOLLOWS:
6092
6093                                            BITS 5-0  FAILING CIS INST (REF COMMENT SECTION
6094                                                      OF OCTAL CODING TABLE - PAGE 66-1)
6095                                            BIT 6     INST TYPE (0=REG; 1=IN LINE)
6096                                            BIT 9     ACTIVE REGISTER SET
6097                                            BITS 13-12 PROCESSOR MODE (11=USER,01=SUP,00=KERNEL)
6098                                            BIT 14     INTERRUPT (1=INST WAS INTERRUPTED)
6099
6100                                            NOTE: A FATAL ERROR # = 177 INDICATES THAT
6101                                                  THE POWER MONITOR BIT (BIT 0 IN THE
6102                                                  CPU ERROR REG) SET DURING EXECUTION OF
6103                                                  THE DIAGNOSTIC.
6104
6105                            2.3 PROGRAM OPTIONS
6106                                ---------------
6107
6108                                    THE FOLLOWING CONTROL CHARACTERS ARE RECOGNIZED BY THE
6109                                    EXERCISER DURING TEST EXECUTION:
6110
6111                                            CNTL T - DISPLAY INST UNDER TEST AND TEST #
6112                                            CNTL C - (RECOGNIZED ONLY IF PROGRAM WAS STARTED
6113                                                     AT 204). RESTART EXERCISER.
6114                                            CNTL D - DISPLAY ALL TEST CASE OPERANDS AND RESULTS
6115                                                     SUBSEQUENT TO EACH CIS INST TEST. CONTINUE (WITHOUT
6116                                                     QUERY) TO NEXT TEST.
6117                                            CNTL E - DISPLAY ALL TEST CASE OPERANDS AND RESULTS
6118                                                     SUBSEQUENT TO EACH CIS INST TEST.  QUERY FOR
6119                                                     CONTINUE.
6120                                            CNTL N - CANCEL PRIOR CNTL D OR CNTL E REQUEST
6121                                            CNTL O - CONTROL OVER PROGRESS INDICATION PRINTOUT
6122                                                     (I.E. INST AND INST CNT; RANDOM NUMBER
6123                                                     GENERATOR SEED). ON - OFF TOGGLE.
6124
6125                                    SWITCH REGISTER OPTIONS:
6126                                            NOTE: ON MACHINES WITH NO HARDWARE SWITCH REGISTER
6127                                            (11/24) LOCATION 176 IS THE SOFTWARE SWITCH REGISTER.
6128
6129                                            BIT 0 - STOP ON TEST; PROGRAM WILL QUERY USER FOR TEST
6130                                                    (DECIMAL) TO STOP ON AND DISPLAY.
6131
6132
6133                            2.4 EXECUTION TIMES
6134                                ---------------
6135
6136                                    THE FIRST PASS RUN TIME (TABLED TEST CASES ONLY) IS
6137                                    APPROXIMATELY: 30 MINUTES ON AN 11/44;  90 MIN ON AN 11/24
6138
6139                                    AFTER THE FIRST PASS THE PROGRAM ENTERS RANDOM TEST MODE
6140                                    AND EXECUTES RANDOMLY GENERATED TEST CASES INDEFINITELY.
6141
```

```
                        IN QV MODE THE PASS TIME IS LESS THAN 5 MINUTES.
                        REFER TO DOCUMENTATION ABOVE FOR DEFINITION OF QV MODE.

                3.0 ERROR INFORMATION
                    -----------------

                        IF THE COMPUTER HALTS WITHOUT ERROR DISPLAY THE FOLLOWING
                        LOCATIONS SHOULL BE EXAMINED TO DETERMINE INFORMATION
                        ABOUT THE FAILING TEST.

                                TINST --- CIS INSTRUCTION UNDER TEST

                                TR0 - TR6 --- CIS INSTRUCTION OPERANDS (LENGTHS,ADDRESSES,ETC)


                        INFORMATION DISPLAYED UPON DETECTION OF AN ERROR DESCRIBES
                        THE COMPLETE ENVIRONMENT OF THE FAILURE.  ALL INSTRUCTION ERRORS
                        ARE DISPLAYED WITH ONE FORMAT.  THE FORMAT CONTAINS SLIGHT
                        VARIATIONS TO ACCOUNT FOR DIFFERENCES BETWEEN CHARACTER
                        AND DECIMAL STRING INSTRUCTIONS.


                        CHARACTER STRING INSTRUCTION ERROR DISPLAY
                        ------------------------------------------


                        ERROR #000001 ------------------------------------------------------------
                          MOVC  INST CNT: 00 00004  INTR CNT:0010  REG SET:0  MODE:K  D EN:N
                                              SL      SA      DL      DA      F                  NZVC
                          INPUT   R0-R6,CC/ 003760 111241 000054 111046 000344 155555 053444 1111
                          EXP OUT R0-R6,CC/ 003704 000000 000000 000000 000344 155555 053444 0000
                          ACT OUT R0-R6,CC/        000001                                        1000
                          EXP BUFFER  111246/ 057
                          ACT BUFFER  100246/ 344
                          C=CONT.;R=REPEAT TEST;S=RESTART;D=DISPLAY MEMORY;H=REPEAT AND HALT AT CIS?


                        DECIMAL STRING INSTRUCTION ERROR DISPLAY
                        ----------------------------------------


                        ERROR #000002------------------------------------------------------------
                          ASHP  INST CNT: 00 00250' INTR CNT: 0000  REG SET:1  MODE:S  D EN:Y
                                              SL      SA      DL      DA      R,S                NZVC
                          INPUT   R0-R6,CC/ 070000 110200 070000 110206 000005 155555 053444 0100
                          EXP OUT R0-R6,CC/ 000000 000000 070000 000206 000000 155555 053444 1011
                          ACT OUT R0-R6,CC/                                                     1000
                          SRC                 0+  SIGN BYTE=0F
                          EXP RESULT          0+  SIGN BYTE=0F
                          ACT RESULT          0+  SIGN BYTE=0F
                          C=CONT.;R=REPEAT TEST;S=RESTART;D=DISPLAY MEMORY;H=REPEAT AND HALT AT CIS?
```

```
6196                    THE WORD 'ERROR' FOLLOWED BY A COUNT OF THE NUMBER OF ERRORS WHICH
6197                    HAVE OCCURRED UP TO AND INCLUDING THIS TEST FAILURE AND A LONG
6198                    STRING OF DASHES IS USED TO SEPARATE ONE TEST FAILURE DISPLAY
6199                    FROM THE NEXT.
6200
6201                    THE SECOND LINE OF THE ERROR REPORT IDENTIFIES THE CIS INSTRUCTION
6202                    THAT FAILED, A COUNT OF THE NUMBER OF CIS INSTRUCTIONS WHICH
6203                    HAVE EXECUTED, A COUNT OF THE NUMBER OF TIMES THE FAILING INSTRUCTION
6204                    TEST CASE WAS SUSPENDED DUE TO INTERRUPT,THE ACTIVE REGISTER SET (0 OR 1),
6205                    THE TEST MODE (KERNEL,SUPERVISOR,USER), AND WHETHER D SPACE
6206                    (MEMORY MGMT) WAS ENABLED DURING CIS INSTRUCTION EXECUTION.
6207
6208                    THE THIRD LINE GIVES HEADER LABELS TO IDENTIFY REGISTER OR
6209                    IN-LINE OPERANDS FOR THE PARTICULAR CIS INSTRUCTION UNDER
6210                    TEST.  'SL' IDENTIFIES THE SOURCE LENGTH OPERAND; 'DA' IDENTIFIES
6211                    THE DESTINATION ADDRESS, ETC.  CONDITION CODE LABELS ARE INCLUDED AT THE
6212                    END OF THIS LINE.
6213
6214                    THE FOURTH LINE DISPLAYS ACTUAL OPERAND VALUES AND CONDITION
6215                    CODES USED AS CIS INSTRUCTION INPUTS.
6216
6217                    THE FIFTH LINE DISPLAYS EXPECTED REGISTER AND CONDITION CODE
6218                    CONTENTS AT THE COMPLETION OF CIS INSTRUCTION EXECUTION.
6219                    THESE EXPECTED VALUES ARE DERIVED BY EMULATION
6220                    AS NOTED ABOVE.
6221
6222                    THE SIXTH LINE, ACTUAL CIS INSTRUCTION OUTPUT, IS DISPLAYED ONLY
6223                    IF ANY OF THE ACTUAL REGISTER OR CONDITION CODE OUTPUTS
6224                    DO NOT AGREE WITH THE EXPECTED VALUES.  ONLY THOSE SPECIFIC
6225                    RESULTS WHICH ARE NOT IN AGREEMENT ARE DISPLAYED.
6226
6227                    THE REMAINING PORTION OF THE ERROR PRINTOUT VARIES WITH
6228                    THE CIS INSTRUCTION UNDER TEST.  SOURCE OPERANDS,EXPECTED
6229                    AND ACTUAL OPERATION RESULTS ARE DISPLAYED WITH EACH
6230                    NIBBLE REPRESENTED BY A HEXADECIMAL DIGIT.  SIGNS ARE DISPLAYED
6231                    IN SYMBOLIC FORMAT (+,-) AND THE SIGN BYTE IS GIVEN
6232                    AS TWO HEXADECIMAL HIBBLES.
6233
6234                    'BUFFER XXXXXX' IS DISPLAYED ONLY WHEN THE BUFFER ASSOCIATED
6235                    WITH ACTUAL CIS INSTRUCTION EXECUTION DIFFERS FROM THAT ASSOCIATED
6236                    WITH EMULATION.  ONLY THE FIRST BYTE (STARTING FROM THE LOW
6237                    ADDRESS END  OF THE BUFFERS UNDER CONSIDERATION) IN DISAGREEMENT
6238                    IS PRINTED.
6239
6240                    THE LAST LINE DISPLAYED AS PART OF EACH ERROR REPORT PERMITS
6241                    THE USER SEVERAL OPTIONS RELATING TO HOW TO PROCEED FOLLOWING AN ERROR.
6242                    CONTINUE (C) PROCEEDS TO THE NEXT INSTRUCTION TEST CASE AS IF
6243                    THE ERROR HAD NEVER OCCURRED.  DISPLAY MEMORY (D) ALLOWS
6244                    THE USER TO DISPLAY ANY BYTES(S) IN MEMORY.  RESTART (S)
6245                    RETURNS CONTROL TO THE BEGINNING OF THE PROGRAM.  REPEAT
6246                    TEST (R) REPEATS THE FAILING TEST CASE.  THE SAME ERROR
6247                    MESSAGE WILL BE DISPLAYED AGAIN PROVIDED THE TEST FAILS
6248                    DURING THE REPEAT TEST.  THE REPEAT AND HALT OPTION REPEATS
6249                    THE FAILING TEST BUT HALTS JUST PRIOR TO EXECUTING THE CIS
```

```
6250                        INSTRUCTION UNDER TEST.  THIS MODE ALLOWS THE USER TO SINGLE
6251                        STEP THROUGH THE FAILING CIS MICROCODE USING CONSOLE COMMANDS.
6252
6253                    4.0 PERFORMANCE AND PROGRESS REPORTS
6254                        ---------------------------------
6255
6256                    4.1 PERFORMANCE REPORTS
6257                        -------------------
6258
6259                        NONE
6260
6261                    4.2 PROGRESS REPORTS
6262                        ---------------
6263
6264                        THE CIS INSTRUCTION AND THE TEST COUNT IS DISPLAYED AT THE
6265                        START OF TESTING FOR EACH CIS INSTRUCTION TYPE (EXCEPT IN
6266                        RANDOM TEST MODE).  NOTE, AS STATED IN SECTION 2.1.3 ABOVE THAT
6267                        MANY TEST CASES ARE EXECUTED FOR EACH CIS INSTRUCTION.
6268
6269                        IN RANDOM TEST MODE THE RANDOM NUMBER GENERATOR SEED
6270                        CONSTANTS ARE DISPLAYED EVERY 1024 TESTS.  IF THE
6271                        DIAGNOSTIC IS TO BE RUN FOR A PROLONGED PERIOD IN THIS
6272                        MODE, THESE CONSTANTS PROVIDE A MECHANISM FOR STOPPING AND
6273                        LATER CONTINUING THE DIAG AT ANY FUTURE TIME.
6274                        REFER TO SECTION 2.1.3 UNDER THE HEADING ''STARTING ADDRESS = 214''
6275                        FOR INSTRUCTIONS ON HOW TO USE THE RANDOM # GENERATOR SEED
6276                        CONSTANTS.
6277
6278                    5.0 REVISION HISTORY
6279                        ----------------
6280
6281                        REVISION B - MADE COMPATIBLE WITH 11/23 AND 11/24 CIS
6282                                   - ADDED STOP ON TEST FEATURE; SEE SECTION 2.3
6283                        REVISION C - FIXED CMPP EMULATOR PROBLEM
6284                                   - USED NEW SYSMAC.C5 TO FIX XON-XOFF PROBLEM
6285                                   - ADDED POWER MONITOR CHECK
6286
6287
6288                    6.0 PROGRAM TABLE OF CONTENTS
6289                        -------------------------
6290
6291                                                                              &
```

```
                                .ENABL ABS,AMA
                                .TITLE  PDP-11 CIS INST EXERCISER
                                ;*COPYRIGHT (C) 1979
                                ;*DIGITAL EQUIPMENT CORP.
                                ;*MAYNARD, MASS. 01754
                                ;*
                                ;*PROGRAM BY BARRY POLAND
                                ;*
                                ;*THIS PROGRAM WAS ASSEMBLED USING THE PDP-11 MAINDEC SYSMAC
                                ;*PACKAGE (MAINDEC-11-DZQAC-C5), JAN, 1981.
                                ;*
000001                          $TN=1
160000                          $SWR=160000     ;;HALT ON ERROR, LOOP ON TEST, INHIBIT ERROR TYPOUT
                                .SBTTL  BASIC DEFINITIONS

                                ;*INITIAL ADDRESS OF THE STACK POINTER *** 1100 ***
001100                          STACK=  1100            ;;FIRST ADDRESS OF THE STACK
001100                          KERSTK= STACK           ;;KERNEL STACK
000700                          SUPSTK= STACK-200       ;;SUPERVISOR STACK
000600                          USESTK= STACK-300       ;;USER STACK
                                .EQUIV  EMT,ERROR       ;;BASIC DEFINITION OF ERROR CALL
                                .EQUIV  IOT,SCOPE       ;;BASIC DEFINITION OF SCOPE CALL
177776                          PS=     177776          ;;PROCESSOR STATUS WORD
                                .EQUIV  PS,PSW
177774                          STKLMT= 177774          ;;STACK LIMIT REGISTER
177772                          PIRQ=   177772          ;;PROGRAM INTERRUPT REQUEST REGISTER
177570                          DSWR=   177570          ;;HARDWARE SWITCH REGISTER
177570                          DDISP=  177570          ;;HARDWARE DISPLAY REGISTER
177546                          LKS=    177546          ;;LINE CLOCK (KW11-L) STATUS REGISTER

                                ;*MISCELLANEOUS DEFINITIONS
000011                          HT=     11              ;;CODE FOR HORIZONTAL TAB
000012                          LF=     12              ;;CODE LINE FEED
000015                          CR=     15              ;;CODE CARRIAGE RETURN
000200                          CRLF=   200             ;;CODE FOR CARRIAGE RETURN-LINE FEED

                                ;*GENERAL PURPOSE REGISTER DEFINITIONS
000000                          R0=     %0              ;;GENERAL REGISTER
000001                          R1=     %1              ;;GENERAL REGISTER
000002                          R2=     %2              ;;GENERAL REGISTER
000003                          R3=     %3              ;;GENERAL REGISTER
000004                          R4=     %4              ;;GENERAL REGISTER
000005                          R5=     %5              ;;GENERAL REGISTER
000006                          R6=     %6              ;;GENERAL REGISTER
000007                          R7=     %7              ;;GENERAL REGISTER
                                .EQUIV  R0,R10          ;;GENERAL REGISTER
                                .EQUIV  R1,R11          ;;GENERAL REGISTER
                                .EQUIV  R2,R12          ;;GENERAL REGISTER
                                .EQUIV  R3,R13          ;;GENERAL REGISTER
                                .EQUIV  R4,R14          ;;GENERAL REGISTER
                                .EQUIV  R5,R15          ;;GENERAL REGISTER
000006                          SP=     %6              ;;STACK POINTER
                                .EQUIV  SP,KSP          ;;KERNEL STACK POINTER
                                .EQUIV  SP,SSP          ;;SUPERVISOR STACK POINTER
```

```
(1)                                 .EQUIV  SP,USP          ;;USER STACK POINTER
(1)             000007              PC=     %7              ;;PROGRAM COUNTER
(1)
(1)                                 ;*PRIORITY LEVEL DEFINITIONS
(1)             000000              PR0=    0               ;;PRIORITY LEVEL 0
(1)             000040              PR1=    40              ;;PRIORITY LEVEL 1
(1)             000100              PR2=    100             ;;PRIORITY LEVEL 2
(1)             000140              PR3=    140             ;;PRIORITY LEVEL 3
(1)             000200              PR4=    200             ;;PRIORITY LEVEL 4
(1)             000240              PR5=    240             ;;PRIORITY LEVEL 5
(1)             000300              PR6=    300             ;;PRIORITY LEVEL 6
(1)             000340              PR7=    340             ;;PRIORITY LEVEL 7
(1)
(1)                                 ;*''SWITCH REGISTER'' SWITCH DEFINITIONS
(1)             100000              SW15=   100000
(1)             040000              SW14=   40000
(1)             020000              SW13=   20000
(1)             010000              SW12=   10000
(1)             004000              SW11=   4000
(1)             002000              SW10=   2000
(1)             001000              SW09=   1000
(1)             000400              SW08=   400
(1)             000200              SW07=   200
(1)             000100              SW06=   100
(1)             000040              SW05=   40
(1)             000020              SW04=   20
(1)             000010              SW03=   10
(1)             000004              SW02=   4
(1)             000002              SW01=   2
(1)             000001              SW00=   1
(1)                                 .EQUIV  SW09,SW9
(1)                                 .EQUIV  SW08,SW8
(1)                                 .EQUIV  SW07,SW7
(1)                                 .EQUIV  SW06,SW6
(1)                                 .EQUIV  SW05,SW5
(1)                                 .EQUIV  SW04,SW4
(1)                                 .EQUIV  SW03,SW3
(1)                                 .EQUIV  SW02,SW2
(1)                                 .EQUIV  SW01,SW1
(1)                                 .EQUIV  SW00,SW0
(1)
(1)                                 ;*DATA BIT DEFINITIONS (BIT00 TO BIT15)
(1)             100000              BIT15=  100000
(1)             040000              BIT14=  40000
(1)             020000              BIT13=  20000
(1)             010000              BIT12=  10000
(1)             004000              BIT11=  4000
(1)             002000              BIT10=  2000
(1)             001000              BIT09=  1000
(1)             000400              BIT08=  400
(1)             000200              BIT07=  200
(1)             000100              BIT06=  100
(1)             000040              BIT05=  40
(1)             000020              BIT04=  20
```

```
(1)  000010                BIT03=  10
(1)  000004                BIT02=  4
(1)  000002                BIT01=  2
(1)  000001                BIT00=  1
(1)                        .EQUIV  BIT09,BIT9
(1)                        .EQUIV  BIT08,BIT8
(1)                        .EQUIV  BIT07,BIT7
(1)                        .EQUIV  BIT06,BIT6
(1)                        .EQUIV  BIT05,BIT5
(1)                        .EQUIV  BIT04,BIT4
(1)                        .EQUIV  BIT03,BIT3
(1)                        .EQUIV  BIT02,BIT2
(1)                        .EQUIV  BIT01,BIT1
(1)                        .EQUIV  BIT00,BIT0
(1)
(1)                        ;*BASIC ''CPU'' TRAP VECTOR ADDRESSES
(1)  000004                ERRVEC= 4               ;;TIME OUT AND OTHER ERRORS
(1)  000010                RESVEC= 10              ;;RESERVED AND ILLEGAL INSTRUCTIONS
(1)  000014                TBITVEC=14              ;;''T'' BIT
(1)  000014                TRTVEC= 14              ;;TRACE TRAP
(1)  000014                BPTVEC= 14              ;;BREAKPOINT TRAP (BPT)
(1)  000020                IOTVEC= 20              ;;INPUT/OUTPUT TRAP (IOT) **SCOPE**
(1)  000024                PWRVEC= 24              ;;POWER FAIL
(1)  000030                EMTVEC= 30              ;;EMULATOR TRAP (EMT) **ERROR**
(1)  000034                TRAPVEC=34              ;;''TRAP'' TRAP
(1)  000060                TKVEC=  60              ;;TTY KEYBOARD VECTOR
(1)  000064                TPVEC=  64              ;;TTY PRINTER VECTOR
(1)  000100                LKVEC=  100             ;;LINE CLOCK (KW11-L) VECTER
(1)  000114                CACHVEC=114             ;;CACHE ERROR INTERRUPT VECTOR
(1)  000240                PIRQVEC=240             ;;PROGRAM INTERRUPT REQUEST VECTOR
(1)  000250                MMVEC=  250             ;;MEMORY MANAGEMENT VECTOR
(1)                        .SBTTL  CACHE   REGISTER DEFINITIONS
(1)
(1)
(1)  177740                LOADRS = 177740         ;;LOWER 16 BITS OF ADDRESS THAT CAUSED ERROR
(1)  177742                HIADRS = 177742         ;;UPPER SIX BITS OF ADDRESS THAT CAUSED ERROR
(1)  177744                MEMERR = 177744         ;;CACHE ERROR REGISTER
(1)  177746                CONTRL = 177746         ;;MEMORY CONTROL REGISTER
(1)  177750                MAINT  = 177750         ;;MEMORY MAINTENENCE REGISTER
(1)  177752                HITMIS = 177752         ;;HIT MISS REGISTER ''1'' IMPLIES HIT IN CACHE
(1)
(1)                        .SBTTL  CPU REGISTER DEFINITIONS
(1)
(1)
(1)  177760                SIZELO = 177760         ;;MEMORY SIZE REGISTER NUMBER TO PUT INTO A PAR
(1)                                                ;;TO GET TO THE LAST 32 WORDS OF MEMORY
(1)  177762                SIZEHI = 177762         ;;HIGH SIZE REGISTER, RESERVED FOR FUTURE USE
(1)                                                ;;CURRENTLY ALL ZERO
(1)  177764                SYSTID = 177764         ;;SYSTEM ID REGISTER
(1)  177766                CPUERR = 177766         ;;CPU ERROR REGISTER HOLDS CONDITION THAT CAUSED
(1)                                                ;;THE TRAP TO ERRVEC (000004)
(1)
(1)
(1)
```

```
(1)                                 .SBTTL  MEMORY MANAGEMENT DEFINITIONS
(1)
(1)
(1)                                 ;*MEMORY MANAGEMENT STATUS REGISTER ADDRESSES
(1)
(1)             177572              MMR0=   177572
(1)             177574              MMR1=   177574
(1)             177576              MMR2=   177576
(1)             172516              MMR3=   172516
(1)                                 .EQUIV  MMR0,SR0
(1)                                 .EQUIV  MMR1,SR1
(1)                                 .EQUIV  MMR2,SR2
(1)                                 .EQUIV  MMR3,SR3
(1)
(1)                                 ;*USER ''I'' PAGE DESCRIPTOR REGISTERS
(1)
(1)             177600              UIPDR0= 177600
(1)             177602              UIPDR1= 177602
(1)             177604              UIPDR2= 177604
(1)             177606              UIPDR3= 177606
(1)             177610              UIPDR4= 177610
(1)             177612              UIPDR5= 177612
(1)             177614              UIPDR6= 177614
(1)             177616              UIPDR7= 177616
(1)
(1)                                 ;*USER ''D'' PAGE DESCRIPTOR REGISTORS
(1)
(1)             177620              UDPDR0= 177620
(1)             177622              UDPDR1= 177622
(1)             177624              UDPDR2= 177624
(1)             177626              UDPDR3= 177626
(1)             177630              UDPDR4= 177630
(1)             177632              UDPDR5= 177632
(1)             177634              UDPDR6= 177634
(1)             177636              UDPDR7= 177636
(1)
(1)                                 ;*USER ''I'' PAGE ADDRESS REGISTERS
(1)
(1)             177640              UIPAR0= 177640
(1)             177642              UIPAR1= 177642
(1)             177644              UIPAR2= 177644
(1)             177646              UIPAR3= 177646
(1)             177650              UIPAR4= 177650
(1)             177652              UIPAR5= 177652
(1)             177654              UIPAR6= 177654
(1)             177656              UIPAR7= 177656
(1)
(1)                                 ;*USER ''D'' PAGE ADDRESS REGISTERS
(1)
(1)             177660              UDPAR0= 177660
(1)             177662              UDPAR1= 177662
(1)             177664              UDPAR2= 177664
(1)             177666              UDPAR3= 177666
(1)             177670              UDPAR4= 177670
```

```
(1)          177672                  UDPAR5= 177672
(1)          177674                  UDPAR6= 177674
(1)          177676                  UDPAR7= 177676
(1)
(1)                                  ;*SUPERVISOR ''I'' PAGE DESCRIPTOR REGISTERS
(1)
(1)          172200                  SIPDR0= 172200
(1)          172202                  SIPDR1= 172202
(1)          172204                  SIPDR2= 172204
(1)          172206                  SIPDR3= 172206
(1)          172210                  SIPDR4= 172210
(1)          172212                  SIPDR5= 172212
(1)          172214                  SIPDR6= 172214
(1)          172216                  SIPDR7= 172216
(1)
(1)                                  ;*SUPERVISOR ''D'' PAGE DESCRIPTOR REGISTERS
(1)
(1)          172220                  SDPDR0= 172220
(1)          172222                  SDPDR1= 172222
(1)          172224                  SDPDR2= 172224
(1)          172226                  SDPDR3= 172226
(1)          172230                  SDPDR4= 172230
(1)          172232                  SDPDR5= 172232
(1)          172234                  SDPDR6= 172234
(1)          172236                  SDPDR7= 172236
(1)
(1)                                  ;*SUPERVISOR ''I'' PAGE ADDRESS REGISTERS
(1)
(1)          172240                  SIPAR0= 172240
(1)          172242                  SIPAR1= 172242
(1)          172244                  SIPAR2= 172244
(1)          172246                  SIPAR3= 172246
(1)          172250                  SIPAR4= 172250
(1)          172252                  SIPAR5= 172252
(1)          172254                  SIPAR6= 172254
(1)          172256                  SIPAR7= 172256
(1)
(1)                                  ;*SUPERVISOR ''D'' PAGE ADDRESS REGISTERS
(1)
(1)          172260                  SDPAR0= 172260
(1)          172262                  SDPAR1= 172262
(1)          172264                  SDPAR2= 172264
(1)          172266                  SDPAR3= 172266
(1)          172270                  SDPAR4= 172270
(1)          172272                  SDPAR5= 172272
(1)          172274                  SDPAR6= 172274
(1)          172276                  SDPAR7= 172276
(1)
(1)                                  ;*KERNEL ''I'' PAGE DESCRIPTOR REGISTERS
(1)
(1)          172300                  KIPDR0= 172300
(1)          172302                  KIPDR1= 172302
(1)          172304                  KIPDR2= 172304
(1)          172306                  KIPDR3= 172306
```

```
(1)             172310                  KIPDR4= 172310
(1)             172312                  KIPDR5= 172312
(1)             172314                  KIPDR6= 172314
(1)             172316                  KIPDR7= 172316
(1)
(1)                                     ;*KERNEL 'D' PAGE DESCRIPTOR REGISTERS
(1)
(1)             172320                  KDPDR0= 172320
(1)             172322                  KDPDR1= 172322
(1)             172324                  KDPDR2= 172324
(1)             172326                  KDPDR3= 172326
(1)             172330                  KDPDR4= 172330
(1)             172332                  KDPDR5= 172332
(1)             172334                  KDPDR6= 172334
(1)             172336                  KDPDR7= 172336
(1)
(1)                                     ;*KERNEL 'I' PAGE ADDRESS REGISTERS
(1)
(1)             172340                  KIPAR0= 172340
(1)             172342                  KIPAR1= 172342
(1)             172344                  KIPAR2= 172344
(1)             172346                  KIPAR3= 172346
(1)             172350                  KIPAR4= 172350
(1)             172352                  KIPAR5= 172352
(1)             172354                  KIPAR6= 172354
(1)             172356                  KIPAR7= 172356
(1)
(1)                                     ;*KERNEL 'D' PAGE ADDRESS REGISTERS
(1)
(1)             172360                  KDPAR0= 172360
(1)             172362                  KDPAR1= 172362
(1)             172364                  KDPAR2= 172364
(1)             172366                  KDPAR3= 172366
(1)             172370                  KDPAR4= 172370
(1)             172372                  KDPAR5= 172372
(1)             172374                  KDPAR6= 172374
(1)             172376                  KDPAR7= 172376
(1)
(1)
(1)
(1)                                     .SBTTL  UNIBUS MAP REGISTER DEFINITIONS
(1)
(1)
(1)                                     ;*THE LOWER 16 BITS OF THE MAP REGISTERS ARE LABELED 'MAPLXX'
(1)                                     ;*THE UPPER 6 BITS OF THE MAP REGISTERS ARE LABELED 'MAPHXX'
(1)
(1)
(1)             170200                  MAPL00 = 170200
(1)             170202                  MAPH00 = 170202
(1)             170204                  MAPL01 = 170204
(1)             170206                  MAPH01 = 170206
(1)             170210                  MAPL02 = 170210
(1)             170212                  MAPH02 = 170212
(1)             170214                  MAPL03 = 170214
```

```
(1)  170216  MAPH03 = 170216
(1)  170220  MAPL04 = 170220
(1)  170222  MAPH04 = 170222
(1)  170224  MAPL05 = 170224
(1)  170226  MAPH05 = 170226
(1)  170230  MAPL06 = 170230
(1)  170232  MAPH06 = 170232
(1)  170234  MAPL07 = 170234
(1)  170236  MAPH07 = 170236
(1)  170240  MAPL10 = 170240
(1)  170242  MAPH10 = 170242
(1)  170244  MAPL11 = 170244
(1)  170246  MAPH11 = 170246
(1)  170250  MAPL12 = 170250
(1)  170252  MAPH12 = 170252
(1)  170254  MAPL13 = 170254
(1)  170256  MAPH13 = 170256
(1)  170260  MAPL14 = 170260
(1)  170262  MAPH14 = 170262
(1)  170264  MAPL15 = 170264
(1)  170266  MAPH15 = 170266
(1)  170270  MAPL16 = 170270
(1)  170272  MAPH16 = 170272
(1)  170274  MAPL17 = 170274
(1)  170276  MAPH17 = 170276
(1)  170300  MAPL20 = 170300
(1)  170302  MAPH20 = 170302
(1)  170304  MAPL21 = 170304
(1)  170306  MAPH21 = 170306
(1)  170310  MAPL22 = 170310
(1)  170312  MAPH22 = 170312
(1)  170314  MAPL23 = 170314
(1)  170316  MAPH23 = 170316
(1)  170320  MAPL24 = 170320
(1)  170320  MAPH24 = 170320
(1)  170324  MAPL25 = 170324
(1)  170326  MAPH25 = 170326
(1)  170330  MAPL26 = 170330
(1)  170332  MAPH26 = 170332
(1)  170334  MAPL27 = 170334
(1)  170336  MAPH27 = 170336
(1)  170340  MAPL30 = 170340
(1)  170342  MAPH30 = 170342
(1)  170344  MAPL31 = 170344
(1)  170346  MAPH31 = 170346
(1)  170350  MAPL32 = 170350
(1)  170352  MAPH32 = 170352
(1)  170354  MAPL33 = 170354
(1)  170356  MAPH33 = 170356
(1)  170360  MAPL34 = 170360
(1)  170362  MAPH34 = 170362
(1)  170364  MAPL35 = 170364
(1)  170366  MAPH35 = 170366
(1)  170370  MAPL36 = 170370
```

```
   (1)          170372                  MAPH36 = 170372
   (1)          170374                  MAPL37 = 170374
   (1)          170376                  MAPH37 = 170376
   (1)                                  .EQUIV  MAPL00,MAPL0
   (1)                                  .EQUIV  MAPH00,MAPH0
   (1)                                  .EQUIV  MAPL01,MAPL1
   (1)                                  .EQUIV  MAPH01,MAPH1
   (1)                                  .EQUIV  MAPL02,MAPL2
   (1)                                  .EQUIV  MAPH02,MAPH2
   (1)                                  .EQUIV  MAPL03,MAPL3
   (1)                                  .EQUIV  MAPH03,MAPH3
   (1)                                  .EQUIV  MAPL04,MAPL4
   (1)                                  .EQUIV  MAPH04,MAPH4
   (1)                                  .EQUIV  MAPL05,MAPL5
   (1)                                  .EQUIV  MAPH05,MAPH5
   (1)                                  .EQUIV  MAPL06,MAPL6
   (1)                                  .EQUIV  MAPH06,MAPH6
   (1)                                  .EQUIV  MAPL07,MAPL7
   (1)                                  .EQUIV  MAPH07,MAPH7
 6870                                   ;
 6871           076175                  DIVPI==076175
 6872           170000                  BS0==170000
 6873           100000                  BS00==100000
 6874           174000                  BS2==174000
 6875           176000                  BS4==176000
 6876           177000                  BS8==177000
 6877           177400                  BS16==177400
 6878           177600                  BS32==177600
 6879           177700                  BS64==177700
 6880           177740                  BS128==177740
 6881           177760                  BS256==177760
 6882           177770                  BS512==177770
 6883           177777                  BSNULL==177777
 6884           177400                  BY==177400
 6885           006000                  MP06000==006000                 ;MASK (176000) THEN OFFSET (6000)
 6886           004000                  MP04000==004000
 6887           000000                  WD==0
 6888           125252                  EOT==125252
 6889           000020                  MP020==000020
 6890           000070                  MP070==000070
 6891           000100                  MP0100==000100
 6892           000140                  MP0140==000140
 6893           002000                  MP02000==002000
 6894           004040                  MP04040==004040
 6895           152525                  DSCPTR==152525
 6896           022000                  MP02200==22000
 6897                                   .SBTTL  TRAP CATCHER
   (1)
   (1)          000000                          .=0
   (1)                                  ;*ALL UNUSED LOCATIONS FROM 4 - 776 CONTAIN A ''.+2,HALT''
   (1)                                  ;*SEQUENCE TO CATCH ILLEGAL TRAPS AND INTERRUPTS
   (1)                                  ;*LOCATION 0 CONTAINS 0 TO CATCH IMPROPERLY LOADED VECTORS
   (1)          000174                          .=174
   (1)  000174  000000                  DISPREG: .WORD  0                ;;SOFTWARE DISPLAY REGISTER
```

```
   (1)  000176  000000                SWREG:   .WORD  0                ;;SOFTWARE SWITCH REGISTER
   (1)                              .SBTTL  STARTING ADDRESS(ES)
   (1)  000200  000137  037066              JMP     @#START ;;JUMP TO STARTING ADDRESS OF PROGRAM
 6899   000204  000137  037276              JMP DVTST
 6900   000210  000137  037074              JMP QVST
 6901   000214  000137  037056              JMP SEEDST
 6908
 6910                             .SBTTL  ACT11 HOOKS
   (1)
   (2)                            ;;*****************************************************************
   (1)                            ;HOOKS REQUIRED BY ACT11
   (1)          000220                      $SVPC=.                  ;SAVE PC
   (1)          000046                      .=46
   (1)  000046  053672                      ENDAD                    ;;1)SET LOC.46 TO ADDRESS OF ENDAD
   (1)          000052                      .=52
   (1)  000052  000000                      .WORD   0                ;;2)SET LOC.52 TO ZERO
   (1)          000220                      .=$SVPC                  ;; RESTORE PC
 6911           001100              .=1100
 6913                             .SBTTL  APT PARAMETER BLOCK
   (1)
   (2)                            ;;*****************************************************************
   (1)                            ;SET LOCATIONS 24 AND 44 AS REQUIRED FOR APT
   (2)                            ;;*****************************************************************
   (1)          001100                      .$X=.   ;;SAVE CURRENT LOCATION
   (1)          000024                      .=24    ;;SET POWER FAIL TO POINT TO START OF PROGRAM
   (1)  000024  000200                      200     ;;FOR APT START UP
   (1)          000044                      .=44    ;;POINT TO APT INDIRECT ADDRESS PNTR.
   (1)  000044  001100                      $APTHDR ;;POINT TO APT HEADER BLOCK
   (1)          001100                      .=.$X   ;;RESET LOCATION COUNTER
   (2)                            ;;*****************************************************************
   (1)                            ;SETUP APT PARAMETER BLOCK AS DEFINED IN THE APT-PDP11 DIAGNOSTIC
   (1)                            ;INTERFACE SPEC.
   (1)
   (1)  001100                    $APTHD:
   (1)  001100  000000            $HIBTS: .WORD   0       ;;TWO HIGH BITS OF 18 BIT MAILBOX ADDR.
   (1)  001102  001114            $MBADR: .WORD   $MAIL   ;;ADDRESS OF APT MAILBOX (BITS 0-15)
   (1)  001104  000170            $TSTM:  .WORD   120.    ;;RUN TIM OF LONGEST TEST
   (1)  001106  000454            $PASTM: .WORD   300.    ;;RUN TIME IN SECS. OF 1ST PASS ON 1 UNIT (QUICK VERIFY)
   (1)  001110  000000            $UNITM: .WORD   0       ;;ADDITIONAL RUN TIME (SECS) OF A PASS FOR EACH ADDITIONAL UNIT
   (1)  001112  000016                    .WORD   $ETEND-$MAIL/2 ;;LENGTH MAILBOX-ETABLE(WORDS)
 6918                             .SBTTL  APT MAILBOX-ETABLE
   (1)
   (2)                            ;;*****************************************************************
   (1)                            .EVEN
   (1)  001114                    $MAIL:                  ;;APT MAILBOX
   (1)  001114  000000            $MSGTY: .WORD   AMSGTY  ;;MESSAGE TYPE CODE
   (1)  001116  000000            $FATAL: .WORD   AFATAL  ;;FATAL ERROR NUMBER
   (1)  001120  000000            $TESTN: .WORD   ATESTN  ;;TEST NUMBER
   (1)  001122  000000            $PASS:  .WORD   APASS   ;;PASS COUNT
   (1)  001124  000000            $DEVCT: .WORD   ADEVCT  ;;DEVICE COUNT
   (1)  001126  000000            $UNIT:  .WORD   AUNIT   ;;I/O UNIT NUMBER
   (1)  001130  000000            $MSGAD: .WORD   AMSGAD  ;;MESSAGE ADDRESS
   (1)  001132  000000            $MSGLG: .WORD   AMSGLG  ;;MESSAGE LENGTH
   (1)  001134                    $ETABLE:                ;;APT ENVIRONMENT TABLE
```

```
(1)  001134  000                  $ENV:   .BYTE   AENV     ;;ENVIRONMENT BYTE
(1)  001135  000                  $ENVM:  .BYTE   AENVM    ;;ENVIRONMENT MODE BITS
(1)  001136  000000               $SWREG: .WORD   ASWREG   ;;APT SWITCH REGISTER
(1)  001140  000000               $USWR:  .WORD   AUSWR    ;;USER SWITCHES
(1)  001142  000000               $CPUOP: .WORD   ACPUOP   ;;CPU TYPE,OPTIONS
(1)                               ;*                       BITS 15-11=CPU TYPE
(1)                               ;*                              11/04=01,11/05=02,11/20=03,11/40=04,11/45=05
(1)                               ;*                              11/70=06,PDQ=07,Q=10
(1)                               ;*                       BIT 10=REAL TIME CLOCK
(1)                               ;*                       BIT  9=FLOATING POINT PROCESSOR
(1)                               ;*                       BIT  8=MEMORY MANAGEMENT
(1)  001144  000                  $MAMS1: .BYTE   AMAMS1   ;;HIGH ADDRESS,M.S. BYTE
(1)  001145  000                  $MTYP1: .BYTE   AMTYP1   ;;MEM. TYPE,BLK#1
(1)                               ;*                       MEM.TYPE BYTE   --  (HIGH BYTE)
(1)                               ;*                              900 NSEC CORE=001
(1)                               ;*                              300 NSEC BIPOLAR=002
(1)                               ;*                              500 NSEC MOS=003
(1)  001146  000000               $MADR1: .WORD   AMADR1   ;;HIGH ADDRESS,BLK#1
(1)                               ;*                         MEM.LAST ADDR.=3 BYTES,THIS WORD AND LOW OF ''TYPE'' ABOVE
(1)  001150                       $ETEND:
(1)                               .MEXIT
6919                              .SBTTL  APT COMMUNICATIONS ROUTINE
(1)
(2)                               ;;*****************************************************************
(1)  001150  112737  000001  001414  $ATY1:  MOVB    #1,$FFLG        ;;TO REPORT FATAL ERROR
(1)  001156  112737  000001  001412  $ATY3:  MOVB    #1,$MFLG        ;;TO TYPE A MESSAGE
(1)  001164  000403                          BR      $ATYC
(1)  001166  112737  000001  001414  $ATY4:  MOVB    #1,$FFLG        ;;TO ONLY REPORT FATAL ERROR
(2)  001174                       $ATYC:
(3)  001174  010046                          MOV     R0,-(SP)        ;;PUSH R0 ON STACK
(3)  001176  010146                          MOV     R1,-(SP)        ;;PUSH R1 ON STACK
(1)  001200  105737  001412                  TSTB    $MFLG           ;;SHOULD TYPE A MESSAGE?
(1)  001204  001450                          BEQ     5$              ;;IF NOT:  BR
(1)  001206  122737  000001  001134          CMPB    #APTENV,$ENV    ;;OPERATING UNDER APT?
(1)  001214  001031                          BNE     3$              ;;IF NOT:  BR
(1)  001216  132737  000100  001135          BITB    #APTSPOOL,$ENVM ;;SHOULD SPOOL MESSAGES?
(1)  001224  001425                          BEQ     3$              ;;IF NOT:  BR
(1)  001226  017600  000004                  MOV     @4(SP),R0       ;;GET MESSAGE ADDR.
(1)  001232  062766  000002  000004          ADD     #2,4(SP)                ;;BUMP RETURN ADDR.
(1)  001240  005737  001114          1$:     TST     $MSGTYPE        ;;SEE IF DONE W/ LAST XMISSION?
(1)  001244  001375                          BNE     1$              ;;IF NOT:  WAIT
(1)  001246  010037  001130                  MOV     R0,$MSGAD       ;;PUT ADDR IN MAILBOX
(1)  001252  105720                  2$:     TSTB    (R0)+           ;;FIND END OF MESSAGE
(1)  001254  001376                          BNE     2$
(1)  001256  163700  001130                  SUB     $MSGAD,R0       ;;SUB START OF MESSAGE
(1)  001262  006200                          ASR     R0              ;;GET MESSAGE LNGTH IN WORDS
(1)  001264  010037  001132                  MOV     R0,$MSGLGT      ;;PUT LENGTH IN MAILBOX
(1)  001270  012737  000004  001114          MOV     #4,$MSGTYPE     ;;TELL APT TO TAKE MSG.
(1)  001276  000413                          BR      5$
(1)  001300  017637  000004  001324  3$:     MOV     @4(SP),4$       ;;PUT MSG ADDR IN JSR LINKAGE
(1)  001306  062766  000002  000004          ADD     #2,4(SP)                ;;BUMP RETURN ADDRESS
(3)  001314  013746  177776                  MOV     177776,-(SP)    ;;PUSH 177776 ON STACK
(1)  001320  004737  111622                  JSR     PC,$TYPE        ;;CALL TYPE MACRO
(1)  001324  000000                  4$:     .WORD   0
```

```
(1)  001326                                  5$:
(1)  001326  105737  001414          10$:    TSTB    $FFLG           ;;SHOULD REPORT FATAL ERROR?
(1)  001332  001416                          BEQ     12$             ;;IF NOT:  BR
(1)  001334  005737  001134                  TST     $ENV            ;;RUNNING UNDER APT?
(1)  001340  001413                          BEQ     12$             ;;IF NOT:  BR
(1)  001342  005737  001114          11$:    TST     $MSGTYPE        ;;FINISHED LAST MESSAGE?
(1)  001346  001375                          BNE     11$             ;;IF NOT:  WAIT
(1)  001350  017637  000004  001116          MOV     @4(SP),$FATAL   ;;GET ERROR #
(1)  001356  062766  000002  000004          ADD     #2,4(SP)                ;;BUMP RETURN ADDR.
(1)  001364  005237  001114                  INC     $MSGTYPE        ;;TELL APT TO TAKE ERROR
(1)  001370  105037  001414          12$:    CLRB    $FFLG           ;;CLEAR FATAL FLAG
(1)  001374  105037  001413                  CLRB    $LFLG           ;;CLEAR LOG FLAG
(1)  001400  105037  001412                  CLRB    $MFLG           ;;CLEAR MESSAGE FLAG
(3)  001404  012601                          MOV     (SP)+,R1        ;;POP STACK INTO R1
(3)  001406  012600                          MOV     (SP)+,R0        ;;POP STACK INTO R0
(1)  001410  000207                          RTS     PC              ;;RETURN
(1)  001412     000          $MFLG:  .BYTE   0               ;;MESSG. FLAG
(1)  001413     000          $LFLG:  .BYTE   0               ;;LOG FLAG
(1)  001414     000          $FFLG:  .BYTE   0               ;;FATAL FLAG
(1)          001416                  .EVEN
(1)          000200          APTSIZE=200
(1)          000001          APTENV=001
(1)          000100          APTSPOOL=100
(1)          000040          APTCSUP=040
6920                         ;;*****************************************************************************
```

```
                                        .SBTTL  GLOBAL DATA SECTION


                                        .SBTTL          TEST COUNTS
001416  000000                          TOTTCH: .WORD 0                 ;TEST COUNT MULTIPLIER
001420  000000                          TOTTC:  .WORD 0                 ;TOTAL TEST COUNT
001422  000000                          INVTC:  .WORD 0                 ;INVALID TEST COUNT
001424  000000                          REDTC:  .WORD 0                 ;REDUNDANT TEST COUNT
```

```
 6934                                   .SBTTL          INPUT TABLE ENTRY TYPE DISPATCH TABLE
 6935                                   ;INPUT TABLE ENTRY TYPE DISPATCH TABLE.
 6936                                   ;
 6937  001426                           ITYPE:
 6938  001426  041226                          .WORD TYPE0
 6939  001430  041376                          .WORD TYPE1
 6940  001432  000000                          .WORD 0
 6941  001434  000000                          .WORD 0
 6942
```

```
6944                                    .SBTTL          POINTERS TO CIS INST FLOW TABLES
6945                                    ;POINTERS TO CIS INSTRUCTION FLOW TABLES.
6946                                    ;
6947  001436                            INO:
6948  001436  000000                           .WORD 0
6949  001440  006340                           .WORD XMOVC
6950  001442  006340                           .WORD XMOVRC
6951  001444  006420                           .WORD XMOVTC
6952  001446  007002                           .WORD XLOCC
6953  001450  007002                           .WORD XSKPC
6954  001452  007140                           .WORD XSCANC
6955  001454  007140                           .WORD XSPANC
6956  001456  006502                           .WORD XCMPC
6957  001460  006564                           .WORD XMATCHC
6958  001462  007050                           .WORD XADDN
6959  001464  007050                           .WORD XSUBN
6960  001466  006646                           .WORD XCMPN
6961  001470  007350                           .WORD XCVTNL
6962  001472  007222                           .WORD XCVTPN
6963  001474  007222                           .WORD XCVTNP
6964  001476  006722                           .WORD XASHN
6965  001500  007300                           .WORD XCVTLN
6966  001502  007050                           .WORD XADDP
6967  001504  007050                           .WORD XSUBP
6968  001506  006646                           .WORD XCMPP
6969  001510  007350                           .WORD XCVTPL
6970  001512  007050                           .WORD XMULP
6971  001514  007050                           .WORD XDIVP
6972  001516  006722                           .WORD XASHP
6973  001520  007300                           .WORD XCVTLP
6974  001522  007412                           .WORD XL2D
6975  001524  007412                           .WORD XL3D
6976
```

```
                                        .SBTTL          FLOW COMMAND DISPATCH TABLE
                                        ;FLOW COMMAND DISPATCH TABLE
                                        ;
                                        FLODIS:
001526                                          .WORD FC00
001526  054032                                  .WORD FC01
001530  042216                                  .WORD FC02
001532  042426                                  .WORD FC03
001534  042526                                  .WORD FC04
001536  042576                                  .WORD FC05
001540  042704                                  .WORD FC06
001542  043012                                  .WORD FC07
001544  043122                                  .WORD FC10
001546  046114                                  .WORD FC11
001550  046150                                  .WORD FC12
001552  046346                                  .WORD FC13
001554  050400                                  .WORD FC14
001556  051560                                  .WORD FC15              ;FLOW COMMANDS 16,& 17 ARE UNUSED.
001560  054502                                  .WORD FC00
001562  054032                                  .WORD FC00
001564  054032
```

```
                                        .SBTTL          PARAMETER TABLE POINTERS
                                        ;PARAMETER TABLE POINTERS
                                        ;
001566                                  PTP:
001566  000000                                .WORD 0
001570  000000                          PTP01:  .WORD 0
001572  000000                          PTP02:  .WORD 0
001574  000000                          PTP03:  .WORD 0
001576  000000                          PTP04:  .WORD 0
001600  000000                          PTP05:  .WORD 0
001602  000000                          PTP06:  .WORD 0
001604  000000                          PTP07:  .WORD 0
001606  000000                          PTP10:  .WORD 0
001610  000000                          PTP11:  .WORD 0
001612  000000                          PTP12:  .WORD 0
001614  000000                          PTP13:  .WORD 0
001616  000000                          PTP14:  .WORD 0
001620  000000                          PTP15:  .WORD 0
001622  000000                          PTP16:  .WORD 0
001624  000000                          PTP17:  .WORD 0
001626  000000                          PTP20:  .WORD 0
001630  000000                          PTP21:  .WORD 0
001632  000000                          PTP22:  .WORD 0
001634  000000                          PTP23:  .WORD 0
001636  000000                          PTP24:  .WORD 0
```

```
                                        .SBTTL          MISCELLANEOUS CONSTANTS
                                        ;MISCELLANEOUS CONSTANTS
                                        ;
001640  130000                          TBADR:  .WORD 130000            ;TEST BUFFER STARTING ADDRESS
001642  002000                          TBLEN:  .WORD  2000             ;TEST BUFFER LENGTH
001644  010000                          RTBLEN: .WORD 10000             ;RANDOM MODE TEST BUFFER LENGTH
001646  140000                          EBADR:  .WORD 140000            ;EMULATION BUFFER STARTING ADDRESS
001650  002000                          EBLEN:  .WORD  2000             ;EMULATION BUFFER LENGTH
001652  020000                          TPERP:  .WORD 20000             ;# OF TESTS PER APT PASS IN RANDOM MODE
001654  002000                          PSEED:  .WORD 2000              ;# OF TESTS TO EXECUTE IN RANDOM MODE


001656  000024                          IPNU:   .WORD 24                ;# OF INPUT PARAMETERS PER INPUT
                                                                        ;  TABLE ENTRY.
001660  000001                          INCSQ1: .WORD 1                 ;INCREMENT SEQUENCE WORD 1
001662  000002                          INCSQ2: .WORD 2                 ;INCREMENT SEQUENCE WORD 2
001664  177776                          TPSW:   .WORD  177776           ;PSW
001666  177560                          TKS:    177560
001670  000240                          KNOP:   NOP
001672  000000                          KHALT:  HALT
001674  000405                          KBR5:   .WORD 405
001676  000403                          KBR3:   .WORD 403
001700  000402                          KBR2:   .WORD 402
001702  123321                          NOTREG: .WORD 123321            ;PATTERN LOADED INTO REG SET NO SELECTED FOR TEST
001704  000002                          EL74:   .WORD 2                 ;11/74 PROCESSOR TYPE
001706  000001                          EL44:   .WORD 1                 ;11/44 PROCESSOR TYPE
001710  000003                          EL2324: .WORD 3                 ;11/23/24 PROCESSOR TYPE
                                                                        ;  BETWEEN PRINTING OF RNG SEED.
                                                                        ;NOTE: ONLY 1 BIT IS ALLOWED TO BE SET IN PSEED.
001712  177562                          TKB:    177562
001714  177564                          TPS:    177564
001716  177566                          TPB:    177566
        000015                          CR=     15
        000012                          LF=     12
        000057                          SL=     57
        000010                          BS=     10
        000007                          MFPT=   7
001720  177777                          PAT0:   .WORD 177777
001722  111111                          PAT1:   .WORD 111111
001724  122222                          PAT2:   .WORD 122222
001726  133333                          PAT3:   .WORD 133333
001730  144444                          PAT4:   .WORD 144444
001732  155555                          PAT5:   .WORD 155555
001734  120606                          IXLTB1: .WORD XLTBL1
001736  177570                          SWR:    .WORD DSWR              ;ADDRESS OF SWITCH REGISTER
001740  177570                          DISPLAY:.WORD DDISP             ;ADDRESS OF DISPLAY REGISTER
```

```
                                        .SBTTL          MISCELLANEOUS VARIABLES
                                        ;MISCELLANEOUS VARIABLES
                                        ;
001742  000000                          CERFLG: .WORD 0                         ;;REV-C
001744  000000                          CERSAV: .WORD 0                         ;;REV-C
001746  000000                          FLOPTR: .WORD 0
001750  000000                          ESEED:  .WORD 0
001752  000000                          DENS:   .WORD 0
001754  000000                          N200M:  .WORD 0
001756  000000                          TSTPSW: .WORD 0
001760  000000                          TBEND:  .WORD 0
001762  000000                          SBR:    .WORD 0
001764  000000                          RANDOM: .WORD 0
001766  000000                          CTACT:  .WORD 0
001770  000000                          PMASK:  .WORD 0
001772  177417                          ZMSK:   .WORD 177417
001774  000000                          RANDTA: .WORD 0
001776  000000                          LIMSTG: .WORD 0
002000  000000                          RNIB:   .WORD 0
002002  000000                          STRNC:  .WORD 0
002004  000000                          STRP1:  .WORD 0
002006  000000                          STRP2:  .WORD 0
002010  000000                          SXRNC:  .WORD 0
002012  000000                          SXRP1:  .WORD 0
002014  000000                          SXRP2:  .WORD 0
002016  000000                          SYRNC:  .WORD 0
002020  000000                          SYRP1:  .WORD 0
002022  000000                          SYRP2:  .WORD 0
002024  000000                          SWRNC:  .WORD 0
002026  000000                          SWRP1:  .WORD 0
002030  000000                          SWRP2:  .WORD 0
002032  000000                          SVRNC:  .WORD 0
002034  000000                          SVRP1:  .WORD 0
002036  000000                          SVRP2:  .WORD 0
002040  000000                          ZCCR:   .WORD 0
002042  000000                          SPCV:   .WORD 0
002044  000000                          TPRECS: .WORD 0
002046  000000                          NOERDS: .WORD 0
002050  000000                          PROGD:  .WORD 0
002052  000000                          SURLEN: .WORD 0
002054  000000                          SURADR: .WORD 0
002056  000000                          REGSET: .WORD 0
002060  000000                          ERRCT:  .WORD 0
002062  000000                          ERRS:   .WORD 0
002064  000000                          TWOSETS:.WORD 0
002066  000000                          FSAVR5: .WORD 0
002070  000000                          FSAVR4: .WORD 0
002072  000000                          FSAVR3: .WORD 0
002074  000000                          FSAVR2: .WORD 0
002076  000000                          FSAVR1: .WORD 0
002100  000000                          FSRUN:  .WORD 0
002102  000000                          MSEED:  .WORD 0
002104  000000                          NBLKS:  .WORD 0
```

```
7144  002106  000000                  TRA:     .WORD 0
7145  002110  000000                  TRL:     .WORD 0
7146  002112  000000                  STGDS1:  .WORD 0
7147  002114  000000                  STGDS2:  .WORD 0
7148  002116  000000                  STGLN:   .WORD 0
7149  002120  000000                  STGAD:   .WORD 0
7150  002122  000000                  SAVSL:   .WORD 0
7151  002124  000000                  SAVSA:   .WORD 0
7152  002126  000000                  SAVSGL:  .WORD 0
7153  002130  000000                  SIGN:    .WORD 0
7154  002132  000000                  VIP:     .WORD 0
7155  002134  000000                  PTW1:    .WORD 0
7156  002136  000000                  FATAL:   .WORD 0
7157  002140  000000                  INPTP:   .WORD 0
7158  002142  000000                  PTPTR:   .WORD 0
7159  002144  000000                  SPHAND:  .WORD 0
7160  002146  000000                  EMPTR:   .WORD 0
7161  002150  000000                  ERRCC:   .WORD 0
7162  002152  000000                  ERRREG:  .WORD 0
7163  002154  000000                  ERRBUF:  .WORD 0
7164  002156  000000                  ERRSTK:  .WORD 0
7165  002160  000000                  PT34:    .WORD 0        ;11/34 TYPE PROCESSOR FLAG
7166  002162  000000                  MMFLG:   .WORD 0        ;WHEN NON ZERO, TESTING WITH MEMORY MGMT ON
7167  002164  000000                  MODE:    .WORD 0        ;PROCESSOR MODE USED FOR CIS INST TEST
7168                                                          ;   (0=KERNEL,1=SUPERVISOR,3=USER)
7169  002166  000000                  DEN:     .WORD 0        ;D-SPACE ENABLED(1)/DISABLED(0)
7170  002170  000000                  NMODES:  .WORD 0        ;# OF PROCESSOR MODES ON MACHINE UNDER TEST
7171                                                          ; (I.E. KERNEL,SUP,USER)
7172  002172  000000                  TRPLOC:  .WORD 0
7173  002174  000000                  HLTLOC:  .WORD 0
7174  002176  000000                  IRXLT:   .WORD 0
7175  002200  000000                  AEADR:   .WORD 0
7176  002202  000000                  AEDTA:   .WORD 0
7177  002204  000000                  EMADR:   .WORD 0
7178  002206  000000                  EMDTA:   .WORD 0
7179  002210  000000                  QRYFLG:  .WORD 0
7180  002212  000000                  QVMODE:  .WORD 0
7181  002214  000000                  MMSTAT:  .WORD 0
7182  002216  000000                  PTQV:    .WORD 0
7183  002220  000000                  ICOMPC:  .WORD 0
7184  002222  000000                  STOPTF:  .WORD 0
7185  002224  000000                  STOPT:   .WORD 0
7186  002226  000000                  RLL:     .WORD 0
7187  002230  000000                  RUL:     .WORD 0
7188  002232  000000                  BAD:     .WORD 0
7189  002234  000000                  TSP:     .WORD 0
7190  002236  000000                  NXFLD:   .WORD 0
7191  002240  000000                  TTR0:    .WORD 0
7192  002242  000000                  TTR1:    .WORD 0
7193  002244  000000                  TTR2:    .WORD 0
7194  002246  000000                  TTR3:    .WORD 0
7195  002250  000000                  TTR4:    .WORD 0
7196  002252  000000                  TTR5:    .WORD 0
7197  002254  000000                  TTR6:    .WORD 0
```

```
7198  002256  000000                  TER0R:  .WORD 0
7199  002260  000000                  TER1R:  .WORD 0
7200  002262  000000                  TER2R:  .WORD 0
7201  002264  000000                  TER3R:  .WORD 0
7202  002266  000000                  TER4R:  .WORD 0
7203  002270  000000                  TER5R:  .WORD 0
7204  002272  000000                  TER6R:  .WORD 0
7205  002274  000000                  TERR:   .WORD 0
7206  002276  000000                  RPTFLG: .WORD 0
7207  002300  000000                  FILLS2: .WORD 0
7208  002302  000000                  OCTIC:  .WORD 0
7209  002304  000000                  TW1:    .WORD 0
7210  002306  000000                  TW2:    .WORD 0
7211  002310  000000                  PRTSGN: .WORD 0
7212  002312  000000                  STGDIG: .WORD 0
7213  002314  000000                  STGTYP: .WORD 0
7214  002316  044244                  TYPTAB: .WORD TYPSZ              ;SIGNED ZONED
7215  002320  044276                          .WORD TYPUZ              ;UNSIGNED ZONED
7216  002322  044300                          .WORD TYPTO              ;TRAILING OVERPUNCH
7217  002324  044406                          .WORD TYPLO              ;LEADING OVERPUNCH
7218  002326  044416                          .WORD TYPTS              ;TRAILING SEPARATE
7219  002330  044462                          .WORD TYPLS              ;LEADING SEPARATE
7220  002332  002336                          .WORD TYPSP              ;RESERVED
7221  002334  002336                          .WORD TYPSP              ;RESERVED
7222  002336  000000                  TYPSP:  HALT
7223  002340     175                  NEGTAB: .BYTE 175                ;-0
7224  002341     112                          .BYTE 112                ;-1
7225  002342     113                          .BYTE 113                ;-2
7226  002343     114                          .BYTE 114                ;-3
7227  002344     115                          .BYTE 115                ;-4
7228  002345     116                          .BYTE 116                ;-5
7229  002346     117                          .BYTE 117                ;-6
7230  002347     120                          .BYTE 120                ;-7
7231  002350     121                          .BYTE 121                ;-8
7232  002351     122                          .BYTE 122                ;-9
7233  002352     135                  NEGTB1: .BYTE 135                ;-0
7234  002353     112                          .BYTE 112                ;-1
7235  002354     113                          .BYTE 113                ;-2
7236  002355     114                          .BYTE 114                ;-3
7237  002356     115                          .BYTE 115                ;-4
7238  002357     116                          .BYTE 116                ;-5
7239  002360     117                          .BYTE 117                ;-6
7240  002361     120                          .BYTE 120                ;-7
7241  002362     121                          .BYTE 121                ;-8
7242  002363     122                          .BYTE 122                ;-9
7243  002364     173                  POSTAB: .BYTE 173                ;+0
7244  002365     101                          .BYTE 101                ;+1
7245  002366     102                          .BYTE 102                ;+2
7246  002367     103                          .BYTE 103                ;+3
7247  002370     104                          .BYTE 104                ;+4
7248  002371     105                          .BYTE 105                ;+5
7249  002372     106                          .BYTE 106                ;+6
7250  002373     107                          .BYTE 107                ;+7
7251  002374     110                          .BYTE 110                ;+8
```

```
7252  002375  111                     .BYTE 111               ;+9
7253  002376  060             POSTB1: .BYTE 060               ;+0
7254  002377  061                     .BYTE 061               ;+1
7255  002400  062                     .BYTE 062               ;+2
7256  002401  063                     .BYTE 063               ;+3
7257  002402  064                     .BYTE 064               ;+4
7258  002403  065                     .BYTE 065               ;+5
7259  002404  066                     .BYTE 066               ;+6
7260  002405  067                     .BYTE 067               ;+7
7261  002406  070                     .BYTE 070               ;+8
7262  002407  071                     .BYTE 071               ;+9
7263  002410  133             POSTB2: .BYTE 133               ;+0
7264  002411  061                     .BYTE 061               ;+1
7265  002412  062                     .BYTE 062               ;+2
7266  002413  063                     .BYTE 063               ;+3
7267  002414  064                     .BYTE 064               ;+4
7268  002415  065                     .BYTE 065               ;+5
7269  002416  066                     .BYTE 066               ;+6
7270  002417  067                     .BYTE 067               ;+7
7271  002420  070                     .BYTE 070               ;+8
7272  002421  071                     .BYTE 071               ;+9
7273  002422  045416          PTYPTA: .WORD PTYPSZ            ;SIGNED ZONED
7274  002424  046112                  .WORD EISTG             ;UNSIGNED ZONED
7275  002426  045260                  .WORD PTYPTO            ;TRAILING OVERPUNCH
7276  002430  045426                  .WORD PTYPLO            ;LEADING OVERPUNCH
7277  002432  045436                  .WORD PTYPTS            ;TRAILING SEPARATE
7278  002434  045452                  .WORD PTYPLS            ;LEADING SEPARATE
7279  002436  002336                  .WORD TYPSP             ;RESERVED
7280  002440  002336                  .WORD TYPSP             ;RESERVED
7281  002442  000000          ONEBEY: .WORD 0
7282  002444  000000          DECINS: .WORD 0
7283  002446  000006          S1TYPE: .WORD 6
7284  002450  000006          S2TYPE: .WORD 6
7285  002452  000006          S3TYPE: .WORD 6
7286  002454  070000          TYPFLD: .WORD 070000
7287  002456  000000          MIXTYP: .WORD 0                 ;MANUALLY SET TO ANY NONZERO VALUE
7288                                                          ;  TO CAUSE TESTING OF MIXED DATA TYPES
7289                                                          ;  WITHIN INST.  NOTE: THIS WILL
7290                                                          ;  GREATLY INCREASE RUN TIME!!!!
7291  002460  000000          PKPTW:  .WORD 0
7292  002462  000000          NDESC:  .WORD 0
7293  002464  000000          ZPM:    .WORD 0
7294  002466  000000          ACINST: .WORD 0
7295  002470  000000                  .WORD 0
7296  002472  000000                  .WORD 0
7297  002474  000000          ONEINS: .WORD 0
7298  002476  000000          PZCODE: .WORD 0
7299  002500  000000          SAVPTR: .WORD 0
7300  002502  000000          SAVSRn: .WORD 0
7301  002504  000000          INSRC1: .WORD 0                 ;SRC1 STRING SAVE BUFFER DESCRIPTOR
7302  002506  003045                  .WORD BUFSR1
7303  002510  000000          INSRC2: .WORD 0                 ;SRC2 STRING SAVE BUFFER DESCRIPTOR
7304  002512  003106                  .WORD BUFSR2
7305
```

```
;
 7306  002514  120000                    RANDSC: .WORD 120000
 7307  002516  000000                            .WORD 0
```

```
7309                                    .SBTTL          PROGRAMMABLE CLOCK CONSTANTS
7310                                    ;PROGRAMMABLE CLOCK CONSTANTS
7311  002520  000104                    PCLK1V: .WORD 104       ;P-CLK 1
7312  002522  000106                    PCLK1P: .WORD 106
7313  002524  172540                    PC1CSR: .WORD 172540
7314  002526  172542                    PC1CSB: .WORD 172542
7315  002530  172544                    PC1CTR: .WORD 172544
7316  002532  000000                    PCLK2V: .WORD 000       ;P-CLK 2
7317  002534  172550                    PC2CSR: .WORD 172550
7318  002536  172552                    PC2CSB: .WORD 172552
7319  002540  172554                    PC2CTR: .WORD 172554
7320  002542  000004                    TIMOUT: .WORD 4
7321
7322  002544  000000                    PROGCT: .WORD 0
7323  002546  000000                    LATCT:  .WORD 0
7324  002550  000000                    LATEN:  .WORD 0
7325  002552  000000                    INTCT:  .WORD 0
7326  002554  000240                    KNOP1:  .WORD NOP
7327  002556  000240                    KNOP2:  .WORD NOP
7328  002560  000240                    KNOP3:  .WORD NOP
7329  002562  000000                    INTRVL: .WORD 0
7330  002564  000000                    STOPLA: .WORD 0         ;IF NONZERO & LATENCY EXCEEDS THIS VALUE PROGRAM HALTS
7331  002566  001000                    MAXIVL: .WORD 1000      ;USER DEFINED MAXIMUM INTERVAL ALLOWED
7332
7333  002570  000000                    STATPS: .WORD 0
7334  002572  000000                    STATR0: .WORD 0
7335  002574  000000                    STATR1: .WORD 0
7336  002576  000000                    STATR2: .WORD 0
7337  002600  000000                    STATR3: .WORD 0
7338  002602  000000                    STATR4: .WORD 0
7339  002604  000000                    STATR5: .WORD 0
7340  002606  000000                    STATR6: .WORD 0
7341  002610  000100                            .BLKW ^D64
7342  003010                            SCSTK:
7343
7344  003010  000000                    SGPR0:  .WORD 0
7345  003012  000000                    SGPR1:  .WORD 0
7346  003014  000000                    SGPR2:  .WORD 0
7347  003016  000000                    SGPR3:  .WORD 0
7348  003020  000000                    SGPR4:  .WORD 0
7349  003022  000000                    SGPR5:  .WORD 0
7350  003024  000000                    SGPR6:  .WORD 0
7351
7352
```

```
                                        .SBTTL          LINE TIME CLOCK CONSTANTS
                                        ;LINE TIME CLOCK CONSTANTS
003026  000100                          LTCIV:  .WORD 100
003030  000102                          LTCIP:  .WORD 102
003032  177546                          CLKS:   .WORD 177546
003034  000000                          LCNT:   .WORD 0
003036  000000                          VLCNT:  .WORD 0
003040  000240                          KNOP4:  .WORD 240
003042  000000                          LTCDLY: .WORD 0
```

```
                                        .SBTTL          SOURCE STRING STORAGE BUFFER
                                        ;SOURCE STRING STORAGE BUFFER - USED BY ERROR PRINTOUT ROUTINES
                                        ;
003044    000                           .BYTE 0
003045  000040                BUFSR1: .BLKB ^D32              ;S1 BUFFER
003105    000                           .BYTE 0
003106  000040                BUFSR2: .BLKB ^D32              ;S2 BUFFER


003146    000                 PB0:    .BYTE           0       ;DISPLAY BUFFER
003147    000                 PB1:    .BYTE           0
003150    000                 PB2:    .BYTE           0
003151    000                 PB3:    .BYTE           0
003152    000                 PB4:    .BYTE           0
003153    000                 PB5:    .BYTE           0
003154    000                 PB6:    .BYTE           0
003155    000                 PB7:    .BYTE           0
```

```
 7387                                   ;DESCRIPTORS AND DESTINATION BUFFER FOR INTERRUPTABILITY SERVICE
 7388                                   ;  ROUTINE DIVPI INST.
 7389                                   ;
 7390  003156  000012                   DIVDS:  .WORD 12                ;SOURCE 1 & 2 DESC
 7391  003160  003254                           .WORD SSTG2
 7392  003162  000020                   DIVDD:  .WORD 20                ;DESTINATION DESC
 7393  003164  003166                           .WORD DESTBUF
 7394  003166  000031                   DESTBUF: .BLKW 31
 7395
 7396
```

```
                                        .SBTTL          PRE-SPECIFIED STRINGS
                                        ;PRE-SPECIFIED STRINGS
                                        ;
003250  001                     SSTG1:  .BYTE 001
003251  001                             .BYTE 001
003252  007                             .BYTE 007
003253  000                             .BYTE 000

003254  012002                  SSTG2:  .WORD 012002            ;PACKED 2,147,483,648  +MAX+1
003256  101564                          .WORD 101564
003260  106144                          .WORD 106144

003262  024404                  SSTG2A: .WORD 024404            ;PACKED 4,294,967,294   +MAX * 2
003264  063511                          .WORD 063511
003266  046051                          .WORD 046051

003270  112102                  SSTG2B: .WORD 112102            ;PACKED 42,949,672,940  +MAX * 20
003272  071226                          .WORD 071226
003274  006224                          .WORD 006224

003276  000402                  SSTG3:  .WORD 000402            ;ZONED 2,147,483,648   +MAX+1
003300  003404                          .WORD 003404
003302  034064                          .WORD 034064
003304  003003                          .WORD 003003
003306  034164                          .WORD 034164

003310  012002                  SSTG4:  .WORD 012002            ;PACKED 2,147,483,647   +MAX
003312  101564                          .WORD 101564
003314  076144                          .WORD 076144

003316  000402                  SSTG5:  .WORD 000402            ;ZONED 2,147,483,647    +MAX
003320  003404                          .WORD 003404
003322  034064                          .WORD 034064
003324  003003                          .WORD 003003
003326  033564                          .WORD 033564

003330  012002                  SSTG6:  .WORD 012002            ;PACKED  -2,147,483,648  -MAX
003332  101564                          .WORD 101564
003334  106544                          .WORD 106544

003336  000402                  SSTG7:  .WORD 000402            ;ZONED  -2,147,483,648   -MAX
003340  003404                          .WORD 003404
003342  034064                          .WORD 034064
003344  003003                          .WORD 003003
003346  074164                          .WORD 074164

003350  012002                  SSTG10: .WORD 012002            ;PACKED   -2,147,483,649  -MAX-1
003352  101564                          .WORD 101564
003354  116544                          .WORD 116544

003356  000402                  SSTG11: .WORD 000402            ;ZONED  -2,147,483,649  -MAX-1
003360  003404                          .WORD 003404
003362  034064                          .WORD 034064
003364  003003                          .WORD 003003
```

```
7452  003366  074564                          .WORD 074564
7453
7454  003370  032022                  SSTG12: .WORD 032022            ;PACKED STRING
7455  003372  074126                          .WORD 074126            ; 12345678912345678912340008912 33
7456  003374  021621                          .WORD 021621
7457  003376  063505                          .WORD 063505
7458  003400  011211                          .WORD 011211
7459  003402  000064                          .WORD 000064
7460  003404  110410                          .WORD 110410
7461  003406  036043                          .WORD 036043
7462
7463  003410  000000                  STG12B: .WORD 000000            ;PACKED STRING
7464  003412  000000                          .WORD 000000
7465  003414  000000                          .WORD 000000
7466  003416  000000                          .WORD 000000
7467  003420  000000                          .WORD 000000
7468  003422  000000                          .WORD 000000
7469  003424  000000                          .WORD 000000
7470  003426  106610                          .WORD 106610            ; 000888-
7471
7472  003430  000100                  STG12C: .WORD 000100            ;PACKED STRING
7473  003432  000000                          .WORD 000000            ; 40000000000000000000000000000000-
7474  003434  000000                          .WORD 000000
7475  003436  000000                          .WORD 000000
7476  003440  000000                          .WORD 000000
7477  003442  000000                          .WORD 000000
7478  003444  000000                          .WORD 000000
7479  003446  006400                          .WORD 006400
7480
7481  003450  001001                  SSTG13: .WORD 001001            ;ZONED STRING
7482  003452  002003                          .WORD 002003            ;  12345678912345678912340008912 33
7483  003454  003005                          .WORD 003005
7484  003456  004007                          .WORD 004007
7485  003460  000411                          .WORD 000411
7486  003462  101602                          .WORD 101602
7487  003464  072564                          .WORD 072564
7488  003466  073566                          .WORD 073566
7489  003470  034470                          .WORD 034470
7490  003472  031061                          .WORD 031061
7491  003474  002003                          .WORD 002003
7492  003476  000000                          .WORD 000000
7493  003500  004000                          .WORD 004000
7494  003502  000411                          .WORD 000411
7495  003504  001402                          .WORD 001402
7496  003506  000063                          .WORD 000063
7497
7498  003510  000000                  STG13B: .WORD 000000            ;ZONED STRING
7499  003512  000000                          .WORD 000000
7500  003514  000000                          .WORD 000000
7501  003516  000000                          .WORD 000000
7502  003520  000000                          .WORD 000000
7503  003522  000000                          .WORD 000000
7504  003524  000000                          .WORD 000000
7505  003526  000000                          .WORD 000000
```

```
7506  003530  000000                          .WORD 000000
7507  003532  000000                          .WORD 000000
7508  003534  000000                          .WORD 000000
7509  003536  000000                          .WORD 000000
7510  003540  000000                          .WORD 000000
7511  003542  000000                          .WORD 000000
7512  003544  004000                          .WORD 004000            ; 000888-
7513  003546  074010                          .WORD 074010
7514
7515  003550  000004                STG13C:   .WORD 000004            ;ZONED STRING
7516  003552  000000                          .WORD 000000            ; 400000000000000000000000000000000-
7517  003554  000000                          .WORD 000000
7518  003556  000000                          .WORD 000000
7519  003560  000000                          .WORD 000000
7520  003562  000000                          .WORD 000000
7521  003564  000000                          .WORD 000000
7522  003566  000000                          .WORD 000000
7523  003570  000000                          .WORD 000000
7524  003572  000000                          .WORD 000000
7525  003574  000000                          .WORD 000000
7526  003576  000000                          .WORD 000000
7527  003600  000000                          .WORD 000000
7528  003602  000000                          .WORD 000000
7529  003604  000000                          .WORD 000000
7530  003606  000160                          .WORD 000160
7531
7532  003610  042006                SSTG14:   .WORD 042006            ;PACKED STRING 3X2**31
7533  003612  050044                          .WORD 050044            ;    6442450944 +
7534  003614  046224                          .WORD 046224
7535
7536  003616  042006                SSTG15:   .WORD 42006             ;PACKED STRING 3X2**31 -
7537  003620  050044                          .WORD 50044             ;6442450944 -
7538  003622  046624                          .WORD 46624
7539
7540  003624  000000                SSTG16:   .WORD 000000            ;PACKED STRING
7541  003626  000000                          .WORD 000000            ; 000000000000333+
7542  003630  000000                          .WORD 000000
7543  003632  036063                          .WORD 036063
7544
```

```
                                        .SBTTL          TEST AND EMULATION OPERANDS
                                        ;TEST OPERANDS
                                        ;
003634                                  TRN:
003634  000000                          TR0:    .WORD 0
003636  000000                          TR1:    .WORD 0
003640  000000                          TR2:    .WORD 0
003642  000000                          TR3:    .WORD 0
003644  000000                          TR4:    .WORD 0
003646  000000                          TR5:    .WORD 0
003650  000000                          TR6:    .WORD 0
003652  000000                          TCC:    .WORD 0

                                        ;TEST RESULTS - REGISTERS
                                        ;
003654                                  TRNR:
003654  000000                          TR0R:   .WORD 0
003656  000000                          TR1R:   .WORD 0
003660  000000                          TR2R:   .WORD 0
003662  000000                          TR3R:   .WORD 0
003664  000000                          TR4R:   .WORD 0
003666  000000                          TR5R:   .WORD 0
003670  000000                          TR6R:   .WORD 0

                                        ;TEST RESULTS - CONDITION CODES
                                        ;
003672  000000                          TCCR:   .WORD 0

                                        ;EMULATION OPERANDS
                                        ;
003674                                  ERN:
003674  000000                          ER0:    .WORD 0
003676  000000                          ER1:    .WORD 0
003700  000000                          ER2:    .WORD 0
003702  000000                          ER3:    .WORD 0
003704  000000                          ER4:    .WORD 0
003706  000000                          ER5:    .WORD 0
003710  000000                          ER6:    .WORD 0

                                        ;EMULATION RESULTS - REGISTERS
                                        ;
003712                                  ERNR:
003712  000000                          ER0R:   .WORD 0
003714  000000                          ER1R:   .WORD 0
003716  000000                          ER2R:   .WORD 0
003720  000000                          ER3R:   .WORD 0
003722  000000                          ER4R:   .WORD 0
003724  000000                          ER5R:   .WORD 0
003726  000000                          ER6R:   .WORD 0

                                        ;EMULATION RESULTS - CONDITION CODES
                                        ;
003730  000000                          ECCR:   .WORD 0
```

```
7600                                    .SBTTL          OCTAL CODING FOR EACH CIS INSTRUCTION
7601                                    ;OCTAL CODING FOR EACH CIS INSTRUCTION
7602                                    ;
7603  003732  000000                    OINST:  .WORD 0                 ; 0 - UNASSIGNED
7604  003734  076030                            .WORD 76030             ; 1 - MOVC
7605  003736  076031                            .WORD 76031             ; 2 - MOVRC
7606  003740  076032                            .WORD 76032             ; 3 - MOVTC
7607  003742  076040                            .WORD 76040             ; 4 - LOCC
7608  003744  076041                            .WORD 76041             ; 5 - SKPC
7609  003746  076042                            .WORD 76042             ; 6 - SCANC
7610  003750  076043                            .WORD 76043             ; 7 - SPANC
7611  003752  076044                            .WORD 76044             ;10 - CMPC
7612  003754  076045                            .WORD 76045             ;11 - MATCHC
7613  003756  076050                            .WORD 76050             ;12 - ADDN
7614  003760  076051                            .WORD 76051             ;13 - SUBN
7615  003762  076052                            .WORD 76052             ;14 - CMPN
7616  003764  076053                            .WORD 76053             ;15 - CVTNL
7617  003766  076054                            .WORD 76054             ;16 - CVTPN
7618  003770  076055                            .WORD 76055             ;17 - CVTNP
7619  003772  076056                            .WORD 76056             ;20 - ASHN
7620  003774  076057                            .WORD 76057             ;21 - CVTLN
7621  003776  076070                            .WORD 76070             ;22 - ADDP
7622  004000  076071                            .WORD 76071             ;23 - SUBP
7623  004002  076072                            .WORD 76072             ;24 - CMPP
7624  004004  076073                            .WORD 76073             ;25 - CVTPL
7625  004006  076074                            .WORD 76074             ;26 - MULP
7626  004010  076075                            .WORD 76075             ;27 - DIVP
7627  004012  076076                            .WORD 76076             ;30 - ASHP
7628  004014  076077                            .WORD 76077             ;31 - CVTLP
7629  004016  076020                            .WORD 76020             ;32 - L2DR
7630  004020  076060                            .WORD 76060             ;33 - L3DR
```

```
                                        .SBTTL          CONDITION CODE USAGE RECORD
                                        ;CONDITION CODE USAGE RECORD
                                        ;LOW 4 BITS OF LOW BYTE = '1' STATE EXERCISED; LOW 4 BITS OF HIGH BYTE = '0' STATE EXERC
7635  004022  000000                    CCREC:  .WORD 0                 ; 0 - UNASSIGNED
7636  004024  000000                            .WORD 0                 ; 1 - MOVC
7637  004026  000000                            .WORD 0                 ; 2 - MOVRC
7638  004030  000000                            .WORD 0                 ; 3 - MOVTC
7639  004032  000003                            .WORD 3                 ; 4 - LOCC
7640  004034  000003                            .WORD 3                 ; 5 - SKPC
7641  004036  000003                            .WORD 3                 ; 6 - SCANC
7642  004040  000003                            .WORD 3                 ; 7 - SPANC
7643  004042  000000                            .WORD 0                 ;10 - CMPC
7644  004044  000003                            .WORD 3                 ;11 - MATCHC
7645  004046  000001                            .WORD 1                 ;12 - ADDN
7646  004050  000001                            .WORD 1                 ;13 - SUBN
7647  004052  000003                            .WORD 3                 ;14 - CMPN
7648  004054  000000                            .WORD 0                 ;15 - CVTNL
7649  004056  000001                            .WORD 1                 ;16 - CVTPN
7650  004060  000001                            .WORD 1                 ;17 - CVTNP
7651  004062  000001                            .WORD 1                 ;20 - ASHN
7652  004064  000001                            .WORD 1                 ;21 - CVTLN
7653  004066  000001                            .WORD 1                 ;22 - ADDP
7654  004070  000001                            .WORD 1                 ;23 - SUBP
7655  004072  000003                            .WORD 3                 ;24 - CMPP
7656  004074  000000                            .WORD 0                 ;25 - CVTPL
7657  004076  000001                            .WORD 1                 ;26 - MULP
7658  004100  000000                            .WORD 0                 ;27 - DIVP
7659  004102  000001                            .WORD 1                 ;30 - ASHP
7660  004104  000001                            .WORD 1                 ;31 - CVTLP
7661  004106  000000                            .WORD 0                 ;32 - L2DR
7662  004110  000000                            .WORD 0                 ;33 - L3DR
7663
```

```
                                .SBTTL          INTERRUPT LATENCY TABLE
                                ;INTERRUPT LATENCY TABLE (WORST CASE VALUE FOR GIVEN INST)
                                ;
004112  000000                  ILATEN: .WORD 0                 ; 0 - UNASSIGNED
004114  000000                          .WORD 0                 ; 1 - MOVC
004116  000000                          .WORD 0                 ; 2 - MOVRC
004120  000000                          .WORD 0                 ; 3 - MOVTC
004122  000000                          .WORD 0                 ; 4 - LOCC
004124  000000                          .WORD 0                 ; 5 - SKPC
004126  000000                          .WORD 0                 ; 6 - SCANC
004130  000000                          .WORD 0                 ; 7 - SPANC
004132  000000                          .WORD 0                 ;10 - CMPC
004134  000000                          .WORD 0                 ;11 - MATCHC
004136  000000                          .WORD 0                 ;12 - ADDN
004140  000000                          .WORD 0                 ;13 - SUBN
004142  000000                          .WORD 0                 ;14 - CMPN
004144  000000                          .WORD 0                 ;15 - CVTNL
004146  000000                          .WORD 0                 ;16 - CVTPN
004150  000000                          .WORD 0                 ;17 - CVTNP
004152  000000                          .WORD 0                 ;20 - ASHN
004154  000000                          .WORD 0                 ;21 - CVTLN
004156  000000                          .WORD 0                 ;22 - ADDP
004160  000000                          .WORD 0                 ;23 - SUBP
004162  000000                          .WORD 0                 ;24 - CMPP
004164  000000                          .WORD 0                 ;25 - CVTPL
004166  000000                          .WORD 0                 ;26 - MULP
004170  000000                          .WORD 0                 ;27 - DIVP
004172  000000                          .WORD 0                 ;30 - ASHP
004174  000000                          .WORD 0                 ;31 - CVTLP
004176  000000                          .WORD 0                 ;32 - L2DR
004200  000000                  LATEND: .WORD 0                 ;33 - L3DR
```

```
                                        .SBTTL          RANDOM EXERCISE MODE MASK TABLE POINTERS
                                        ;RANDOM EXERCISE MODE MASK TABLE POINTERS
                                        ;
004202  000000                  MINST:  .WORD 0                 ; 0 - UNASSIGNED
004204  006074                          .WORD MMOVC             ; 1 - MOVC
004206  006074                          .WORD MMOVRC            ; 2 - MOVRC
004210  006110                          .WORD MMOVTC            ; 3 - MOVTC
004212  006144                          .WORD MLOCC             ; 4 - LOCC
004214  006144                          .WORD MSKPC             ; 5 - SKPC
004216  006154                          .WORD MSCANC            ; 6 - SCANC
004220  006154                          .WORD MSPANC            ; 7 - SPANC
004222  006074                          .WORD MCMPC             ;10 - CMPC
004224  006170                          .WORD MMTCHC            ;11 - MATCHC
004226  006250                          .WORD MADDN             ;12 - ADDN
004230  006250                          .WORD MSUBN             ;13 - SUBN
004232  006276                          .WORD MCMPN             ;14 - CMPN
004234  006232                          .WORD MCVTNL            ;15 - CVTNL
004236  006204                          .WORD MCVTPN            ;16 - CVTPN
004240  006204                          .WORD MCVTNP            ;17 - CVTNP
004242  006322                          .WORD MASHN             ;20 - ASHN
004244  006220                          .WORD MCVTLN            ;21 - CVTLN
004246  006250                          .WORD MADDP             ;22 - ADDP
004250  006250                          .WORD MSUBP             ;23 - SUBP
004252  006276                          .WORD MCMPP             ;24 - CMPP
004254  006232                          .WORD MCVTPL            ;25 - CVTPL
004256  006250                          .WORD MMULP             ;26 - MULP
004260  006250                          .WORD MDIVP             ;27 - DIVP
004262  006322                          .WORD MASHP             ;30 -  SHP
004264  006220                          .WORD MCVTLP            ;31 - CVTLP
```

```
                                        .SBTTL          DECIMAL INST DATA TYPE CONTROL WORDS
                                        ;DECIMAL INSTRUCTION DATA TYPE CONTROL WORDS
                                        ;
004266  004220                          DECTYP: .WORD DECTTB-50

004270  001400                          DECTTB: .WORD 1400              ;ADDN   NDESC,PKPTW
004272  002000                                  .WORD 2000              ;       ZPM,SXTYPE
004274  001400                                  .WORD 1400              ;SUBN
004276  002000                                  .WORD 2000
004300  001000                                  .WORD 1000              ;CMPN
004302  002000                                  .WORD 2000
004304  000400                                  .WORD 0400              ;CVTNL
004306  002000                                  .WORD 2000
004310  001006                                  .WORD 1006              ;CVTPN
004312  004006                                  .WORD 4006
004314  001060                                  .WORD 1060              ;CVTNP
004316  003060                                  .WORD 3060
004320  001000                                  .WORD 1000              ;ASHN
004322  002000                                  .WORD 2000
004324  000400                                  .WORD 0400              ;CVTLN
004326  002000                                  .WORD 2000
004330  001400                                  .WORD 1400              ;ADDP
004332  001777                                  .WORD 1777
004334  001400                                  .WORD 1400              ;SUBP
004336  001777                                  .WORD 1777
004340  001000                                  .WORD 1000              ;CMPP
004342  001777                                  .WORD 1777
004344  000400                                  .WORD 0400              ;CVTPL
004346  001777                                  .WORD 1777
004350  001400                                  .WORD 1400              ;MULP
004352  001777                                  .WORD 1777
004354  001400                                  .WORD 1400              ;DIVP
004356  001777                                  .WORD 1777
004360  001000                                  .WORD 1000              ;ASHP
004362  001777                                  .WORD 1777
004364  000400                                  .WORD 0400              ;CVTLP
004366  001777                                  .WORD 1777
```

```
                                        .SBTTL          TYPE 0  INDIRECTLY SPECIFIED PARAMETERS
                                        ;TYPE 0 ENTRY - INDIRECTLY SPECIFIED PARAMETERS

004370  000000                  INSTID: .WORD 0                 ;UNASSIGNED
004372     006                          .BYTE 6                 ;MOVC
004373     000                          .BYTE 0
004374     006                          .BYTE 6                 ;MOVRC
004375     000                          .BYTE 0
004376     006                          .BYTE 6                 ;MOVTC
004377     015                          .BYTE 15
004400     004                          .BYTE 4                 ;LOCC
004401     000                          .BYTE 0
004402     004                          .BYTE 4                 ;SKPC
004403     000                          .BYTE 0
004404     006                          .BYTE 6                 ;SCANC
004405     011                          .BYTE 11
004406     006                          .BYTE 6                 ;SPANC
004407     011                          .BYTE 11
004410     006                          .BYTE 6                 ;CMPC
004411     011                          .BYTE 11
004412     006                          .BYTE 6                 ;MATCHC
004413     011                          .BYTE 11
004414     007                          .BYTE 7                 ;ADDN
004415     012                          .BYTE 12
004416     007                          .BYTE 7                 ;SUBN
004417     012                          .BYTE 12
004420     006                          .BYTE 6                 ;CMPN
004421     011                          .BYTE 11
004422     003                          .BYTE 3                 ;CVTNL
004423     000                          .BYTE 0
004424     005                          .BYTE 5                 ;CVTPN
004425     000                          .BYTE 0
004426     005                          .BYTE 5                 ;CVTNP
004427     000                          .BYTE 0
004430     006                          .BYTE 6                 ;ASHN
004431     000                          .BYTE 0
004432     000                          .BYTE 0                 ;CVTLN
004433     000                          .BYTE 0
004434     007                          .BYTE 7                 ;ADDP
004435     012                          .BYTE 12
004436     007                          .BYTE 7                 ;SUBP
004437     012                          .BYTE 12
004440     006                          .BYTE 6                 ;CMPP
004441     011                          .BYTE 11
004442     003                          .BYTE 3                 ;CVTPL
004443     000                          .BYTE 0
004444     007                          .BYTE 7                 ;MULP
004445     012                          .BYTE 12
004446     007                          .BYTE 7                 ;DIVP
004447     012                          .BYTE 12
004450     006                          .BYTE 6                 ;ASHP
004451     000                          .BYTE 0
004452     000                          .BYTE 0                 ;CVTLP
004453     000                          .BYTE 0
```

```
                                        .SBTTL          ASCII TABLE FOR CIS INST NMEUMONICS
                                        ;
                                        ;ASCII TABLE FOR CIS INSTRUCTION NMEUMONICS
                                        ;
004454                                  ASZINS:
004454  047515  041526  000000                .ASCII  /MOVC/<0><0>
004462  073204                                .WORD IMOVC
004464  047515  041526  000061                .ASCII  /MOVC1/<0>
004472  073260                                .WORD IMOVC1
004474  047515  041526  000062                .ASCII  /MOVC2/<0>
004502  073334                                .WORD IMOVC2
004504  047514  041503  000000                .ASCII  /LOCC/<0><0>
004512  073410                                .WORD ILOCC
004514  047514  041503  000061                .ASCII  /LOCC1/<0>
004522  073464                                .WORD ILOCC1
004524  047514  041503  000062                .ASCII  /LOCC2/<0>
004532  073540                                .WORD ILOCC2
004534  046503  041520  000000                .ASCII  /CMPC/<0><0>
004542  073614                                .WORD ICMPC
004544  046503  041520  000061                .ASCII  /CMPC1/<0>
004552  073670                                .WORD ICMPC1
004554  046503  041520  000062                .ASCII  /CMPC2/<0>
004562  073744                                .WORD ICMPC2
004564  047515  051126  000103                .ASCII  /MOVRC/<0>
004572  074020                                .WORD IMOVR
004574  047515  051126  030503                .ASCII  /MOVRC1/
004602  074074                                .WORD IMOVR1
004604  047515  051126  031103                .ASCII  /MOVRC2/
004612  074150                                .WORD IMOVR2
004614  047515  052126  000103                .ASCII  /MOVTC/<0>
004622  074224                                .WORD IMOVT
004624  047515  052126  030503                .ASCII  /MOVTC1/
004632  074300                                .WORD IMOVT1
004634  047515  052126  031103                .ASCII  /MOVTC2/
004642  074354                                .WORD IMOVT2
004644  045523  041520  000000                .ASCII  /SKPC/<0><0>
004652  074430                                .WORD   ISKPC
004654  045523  041520  000061                .ASCII  /SKPC1/<0>
004662  074504                                .WORD ISKPC1
004664  045523  041520  000062                .ASCII  /SKPC2/<0>
004672  074560                                .WORD ISKPC2
004674  040515  041524  000000                .ASCII  /MATC/<0><0>
004702  074634                                .WORD IMATC
004704  040515  041524  000061                .ASCII  /MATC1/<0>
004712  074710                                .WORD IMATC1
004714  040515  041524  000062                .ASCII  /MATC2/<0>
004722  074764                                .WORD IMATC2
004724  041523  047101  000103                .ASCII  /SCANC/<0>
004732  075040                                .WORD ISCAN
004734  041523  047101  030503                .ASCII  /SCANC1/
004742  075114                                .WORD ISCAN1
004744  041523  047101  031103                .ASCII  /SCANC2/
004752  075170                                .WORD ISCAN2
004754  050123  047101  000103                .ASCII  /SPANC/<0>
```

```
 7875  004762  075244                        .WORD ISPAN
 7876  004764  050123  047101  030503        .ASCII  /SPANC1/
 7877  004772  075320                        .WORD ISPAN1
 7878  004774  050123  047101  031103        .ASCII  /SPANC2/
 7879  005002  075374                        .WORD ISPAN2
 7880  005004  053103  050124  000116        .ASCII  /CVTPN/<0>
 7881  005012  075450                        .WORD ICPZ
 7882  005014  053103  050124  030516        .ASCII  /CVTPN1/
 7883  005022  075524                        .WORD ICPZ1
 7884  005024  053103  047124  000120        .ASCII  /CVTNP/<0>
 7885  005032  075600                        .WORD ICZP
 7886  005034  053103  047124  030520        .ASCII  /CVTNP1/
 7887  005042  075654                        .WORD ICZP1
 7888  005044  053103  047124  031120        .ASCII  /CVTNP2/
 7889  005052  075730                        .WORD ICZP2
 7890  005054  053103  046124  000120        .ASCII  /CVTLP/<0>
 7891  005062  076004                        .WORD ICLP
 7892  005064  053103  046124  030520        .ASCII  /CVTLP1/
 7893  005072  076060                        .WORD ICLP1
 7894  005074  053103  046124  031120        .ASCII  /CVTLP2/
 7895  005102  076134                        .WORD ICLP2
 7896  005104  053103  046124  000116        .ASCII  /CVTLN/<0>
 7897  005112  076210                        .WORD ICLZ
 7898  005114  053103  046124  030516        .ASCII  /CVTLN1/
 7899  005122  076264                        .WORD ICLZ1
 7900  005124  053103  050124  000114        .ASCII  /CVTPL/<0>
 7901  005132  076340                        .WORD ICPL
 7902  005134  053103  050124  030514        .ASCII  /CVTPL1/
 7903  005142  076414                        .WORD ICPL1
 7904  005144  053103  050124  031114        .ASCII  /CVTPL2/
 7905  005152  076470                        .WORD ICPL2
 7906  005154  053103  050124  031514        .ASCII  /CVTPL3/
 7907  005162  076544                        .WORD ICPL3
 7908  005164  053103  047124  000114        .ASCII  /CVTNL/<0>
 7909  005172  076620                        .WORD ICZL
 7910  005174  053103  047124  030514        .ASCII  /CVTNL1/
 7911  005202  076674                        .WORD ICZL1
 7912  005204  053103  047124  031114        .ASCII  /CVTNL2/
 7913  005212  076750                        .WORD ICZL2
 7914  005214  042101  050104  000000        .ASCII  /ADDP/<0><0>
 7915  005222  077024                        .WORD IADDP
 7916  005224  042101  050104  000061        .ASCII  /ADDP1/<0>
 7917  005232  077100                        .WORD IADDP1
 7918  005234  042101  050104  000062        .ASCII  /ADDP2/<0>
 7919  005242  077154                        .WORD IADDP2
 7920  005244  042101  050104  000063        .ASCII  /ADDP3/<0>
 7921  005252  077230                        .WORD IADDP3
 7922  005254  042101  050104  000064        .ASCII  /ADDP4/<0>
 7923  005262  077304                        .WORD IADDP4
 7924  005264  042101  047104  000000        .ASCII  /ADDN/<0><0>
 7925  005272  077360                        .WORD IADDN
 7926  005274  042101  047104  000061        .ASCII  /ADDN1/<0>
 7927  005302  077434                        .WORD IADDN1
 7928  005304  042101  047104  000062        .ASCII  /ADDN2/<0>
```

```
7929  005312  077510                        .WORD IADDN2
7930  005314  042101  047104  000063        .ASCII  /ADDN3/<0>
7931  005322  077564                        .WORD IADDN3
7932  005324  042101  047104  000064        .ASCII  /ADDN4/<0>
7933  005332  077640                        .WORD IADDN4
7934  005334  052523  050102  000000        .ASCII  /SUBP/<0><0>
7935  005342  077770                        .WORD ISUBP
7936  005344  052523  050102  000061        .ASCII  /SUBP1/<0>
7937  005352  100044                        .WORD ISUBP1
7938  005354  052523  050102  000062        .ASCII  /SUBP2/<0>
7939  005362  100120                        .WORD ISUBP2
7940  005364  052523  050102  000063        .ASCII  /SUBP3/<0>
7941  005372  100174                        .WORD ISUBP3
7942  005374  052523  050102  000064        .ASCII  /SUBP4/<0>
7943  005402  100250                        .WORD ISUBP4
7944  005404  052523  047102  000000        .ASCII  /SUBN/<0><0>
7945  005412  100324                        .WORD ISUBN
7946  005414  052523  047102  000061        .ASCII  /SUBN1/<0>
7947  005422  100400                        .WORD ISUBN1
7948  005424  052523  047102  000062        .ASCII  /SUBN2/<0>
7949  005432  100454                        .WORD ISUBN2
7950  005434  052523  047102  000063        .ASCII  /SUBN3/<0>
7951  005442  100530                        .WORD ISUBN3
7952  005444  052523  047102  000064        .ASCII  /SUBN4/<0>
7953  005452  100604                        .WORD ISUBN4
7954  005454  046503  050120  000000        .ASCII  /CMPP/<0><0>
7955  005462  100660                        .WORD ICMPP
7956  005464  046503  050120  000061        .ASCII  /CMPP1/<0>
7957  005472  100734                        .WORD ICMPP1
7958  005474  046503  050120  000062        .ASCII  /CMPP2/<0>
7959  005502  101010                        .WORD ICMPP2
7960  005504  046503  050120  000063        .ASCII  /CMPP3/<0>
7961  005512  101064                        .WORD ICMPP3
7962  005514  046503  050120  000064        .ASCII  /CMPP4/<0>
7963  005522  101140                        .WORD ICMPP4
7964  005524  046503  047120  000000        .ASCII  /CMPN/<0><0>
7965  005532  101214                        .WORD ICMPN
7966  005534  046503  047120  000061        .ASCII  /CMPN1/<0>
7967  005542  101270                        .WORD ICMPN1
7968  005544  046503  047120  000062        .ASCII  /CMPN2/<0>
7969  005552  101344                        .WORD ICMPN2
7970  005554  046503  047120  000063        .ASCII  /CMPN3/<0>
7971  005562  101420                        .WORD ICMPN3
7972  005564  046503  047120  000064        .ASCII  /CMPN4/<0>
7973  005572  101474                        .WORD ICMPN4
7974  005574  051501  050110  000000        .ASCII  /ASHP/<0><0>
7975  005602  101550                        .WORD IASHP
7976  005604  051501  050110  000061        .ASCII  /ASHP1/<0>
7977  005612  101624                        .WORD IASHP1
7978  005614  051501  050110  000062        .ASCII  /ASHP2/<0>
7979  005622  101700                        .WORD IASHP2
7980  005624  051501  047110  000000        .ASCII  /ASHN/<0><0>
7981  005632  101754                        .WORD IASHN
7982  005634  051501  047110  000061        .ASCII  /ASHN1/<0>
```

```
 7983  005642  102030                        .WORD IASHN1
 7984  005644  051501  047110  000062        .ASCII  /ASHN2/<0>
 7985  005652  102104                        .WORD IASHN2
 7986  005654  052515  050114  000000        .ASCII  /MULP/<0><0>
 7987  005662  102160                        .WORD IMULP
 7988  005664  052515  050114  000061        .ASCII  /MULP1/<0>
 7989  005672  102234                        .WORD IMULP1
 7990  005674  052515  050114  000062        .ASCII  /MULP2/<0>
 7991  005702  102310                        .WORD IMULP2
 7992  005704  052515  050114  000063        .ASCII  /MULP3/<0>
 7993  005712  102364                        .WORD IMULP3
 7994  005714  052515  050114  000064        .ASCII  /MULP4/<0>
 7995  005722  102440                        .WORD IMULP4
 7996  005724  052515  050114  000065        .ASCII  /MULP5/<0>
 7997  005732  102514                        .WORD IMULP5
 7998  005734  052515  050114  000066        .ASCII  /MULP6/<0>
 7999  005742  102570                        .WORD IMULP6
 8000  005744  052515  050114  000067        .ASCII  /MULP7/<0>
 8001  005752  102644                        .WORD IMULP7
 8002  005754  044504  050126  000000        .ASCII  /DIVP/<0><0>
 8003  005762  102720                        .WORD IDIVP
 8004  005764  044504  050126  000061        .ASCII  /DIVP1/<0>
 8005  005772  102774                        .WORD IDIVP1
 8006  005774  044504  050126  000062        .ASCII  /DIVP2/<0>
 8007  006002  103050                        .WORD IDIVP2
 8008  006004  044504  050126  000063        .ASCII  /DIVP3/<0>
 8009  006012  103124                        .WORD IDIVP3
 8010  006014  044504  050126  000064        .ASCII  /DIVP4/<0>
 8011  006022  103200                        .WORD IDIVP4
 8012  006024  044504  050126  000065        .ASCII  /DIVP5/<0>
 8013  006032  103254                        .WORD IDIVP5
 8014  006034  044504  050126  000066        .ASCII  /DIVP6/<0>
 8015  006042  103330                        .WORD IDIVP6
 8017  006044  031114  000104  000000        .ASCII  /L2D/<0><0><0>
 8018  006052  073054                        .WORD IL2D
 8019  006054  031514  000104  000000        .ASCII  /L3D/<0><0><0>
 8020  006062  073130                        .WORD IL3D
 8021  006064  000000                        .WORD 0
 8022  006066  000000                        .WORD 0
 8023  006070  000000                        .WORD 0
 8024  006072  000000                        .WORD 0
```

```
 8026                                   .SBTTL          RANDOM EXERCISE MASK TABLES
 8027                                   ;
 8028                                   ;RANDOM EXERCISING MASK TABLES
 8029                                   ;
 8030
 8031  006074                           MMOVC:
 8032  006074                           MCMPC:
 8033  006074                           MMOVRC:
 8035  006074  174000                           .WORD BS2               ;IP1 MASK       (LEN)
 8036  006076  176000                           .WORD BS4               ;IP2            (ADR)
 8037  006100  174000                           .WORD BS2               ;IP3            (LEN)
 8038  006102  174000                           .WORD BS2               ;IP4            (ADR)
 8046  006104  177400                           .WORD BY                ;IP5            (FILL)
 8047  006106  125252                           .WORD EOT
 8048
 8049
 8050
 8051
 8052  C06110                           MMOVTC:
 8054  006110  174000                           .WORD BS2               ;IP1 MASK       (LEN)
 8055  006112  176000                           .WORD BS4               ;IP2            (ADR)
 8056  006114  174000                           .WORD BS2               ;IP3            (LEN)
 8057  006116  002000                           .WORD MP02000           ;IP4            (ADR)
 8065  006120  177400                           .WORD BY                ;IP5            (FILL)
 8066  006122  177777                           .WORD BSNULL            ;IP6
 8067  006124  177777                           .WORD BSNULL            ;IP7
 8068  006126  177777                           .WORD BSNULL            ;IP10
 8069  006130  177777                           .WORD BSNULL            ;IP11
 8070  006132  177777                           .WORD BSNULL            ;IP12
 8071  006134  177777                           .WORD BSNULL            ;IP13
 8072  006136  177777                           .WORD BSNULL            ;IP14
 8073  006140  022000                           .WORD MP02200           ;IP15           (TABLE ADR)
 8074  006142  125252                           .WORD EOT
 8075
```

```
                                        ;
                                        ;RANDOM EXERCISE MASK TABLES (CONTINUED)
                                        ;
                                        MLOCC:
                                        MSKPC:
                                                .WORD BS2               ;IP1 MASK       (LEN)
                                                .WORD BS2               ;IP2            (ADR)
                                                .WORD BY                ;IP3            (CHAR)
                                                .WORD EOT

                                        MSCANC:
                                        MSPANC:
                                                .WORD BS2               ;IP1 MASK       (LEN)
                                                .WORD BS2               ;IP2            (ADR)
                                                .WORD BY                ;IP3            (TABLE LEN)
                                                .WORD BY                ;IP4            (TABLE MASK)
                                                .WORD BS2               ;IP5            (TABLE ADR)
                                                .WORD EOT

                                        MMTCHC:
                                                .WORD BS8               ;IP1 MASK       (LEN)
                                                .WORD BS4               ;IP2            (ADR)
                                                .WORD BS2               ;IP3            (LEN)
                                                .WORD BS2               ;IP4            (ADR)
                                                .WORD BY                ;IP5            (DATA)
                                                .WORD EOT
```

```
 8133
 8134                                   ;
 8135                                   ;RANDOM EXERCISE MODE MASK TABLES (CONTINUED)
 8136                                   ;
 8137
 8138  006204                          MCVTNP:
 8139  006204  177740                  MCVTPN: .WORD BS128              ;IP1 MASK       (LEN)
 8141  006206  176000                          .WORD BS4               ;IP2            (ADR)
 8146  006210  177740                          .WORD BS128             ;IP3            (LEN)
 8148  006212  004000                          .WORD MP04000           ;IP4            (ADR)
 8153  006214  152525                          .WORD DSCPTR            ;IP5            (DESC POINTER)
 8154  006216  125252                          .WORD EOT
 8155
 8156
 8157  006220                          MCVTLP:
 8158  006220  000000                  MCVTLN: .WORD WD                 ;IP1 MASK       (LONG-HIGH)
 8159  006222  000000                          .WORD WD                ;IP2            (LONG-LOW)
 8160  006224  177740                          .WORD BS128             ;IP3            (LEN)
 8162  006226  174000                          .WORD BS2               ;IP4            (ADR)
 8167  006230  125252                          .WORD EOT
 8168
 8169
 8170  006232                          MCVTPL:
 8171  006232  177740                  MCVTNL: .WORD BS128              ;IP1 MASK       (LEN)
 8173  006234  174000                          .WORD BS2               ;IP2            (ADR)
 8178  006236  152525                          .WORD DSCPTR            ;IP3            (DESC POINTER)
 8179  006240  177777                          .WORD BSNULL            ;IP4
 8180  006242  177777                          .WORD BSNULL            ;IP5
 8181  006244  177400                          .WORD BY                ;IP6            (DATA)
 8182  006246  125252                          .WORD EOT
```

```
8184
8185                                    ;
8186                                    ;RANDOM EXERCISE MODE MASK TABLES (CONTINUED)
8187                                    ;
8188
8189  006250                            MADDP:
8190  006250                            MADDN:
8191  006250                            MSUBP:
8192  006250                            MSUBN:
8193  006250                            MMULP:
8194  006250                            MDIVP:
8195  006250  177740                           .WORD BS128             ;IP1 MASK       (LEN)
8197  006252  177000                           .WORD BS8               ;IP2            (ADR)
8198  006254  177740                           .WORD BS128             ;IP3            (LEN)
8199  006256  002000                           .WORD MP02000           ;IP4            (ADR)
8200  006260  177740                           .WORD BS128             ;IP5            (LEN)
8201  006262  004040                           .WORD MP04040           ;IP6            (ADR)
8210  006264  152525                           .WORD DSCPTR            ;IP7            (DESC POINTER)
8211  006266  177777                           .WORD BSNULL            ;IP10
8212  006270  177777                           .WORD BSNULL            ;IP11
8213  006272  152525                           .WORD DSCPTR            ;IP12           (DESC POINTER)
8214  006274  125252                           .WORD EOT
8215
8216
8217  006276                            MCMPN:
8218  006276                            MCMPP:
8219  006276  177740                           .WORD BS128             ;IP1 MASK       (LEN)
8221  006300  176000                           .WORD BS4               ;IP2            (ADR)
8222  006302  177740                           .WORD BS128             ;IP3            (LEN)
8223  006304  004000                           .WORD MP04000           ;IP4            (ADR)
8230  006306  177400                           .WORD BY                ;IP5            (DATA)
8231  006310  152525                           .WORD DSCPTR            ;IP6            (DESC POINTER)
8232  006312  177777                           .WORD BSNULL            ;IP7
8233  006314  177777                           .WORD BSNULL            ;IP10
8234  006316  152525                           .WORD DSCPTR            ;IP11           (DESC POINTER)
8235  006320  125252                           .WORD EOT
```

```
8237
8238                                    ;
8239                                    ;RANDOM EXERCISE MODE MASK TABLES (CONTINUED)
8240                                    ;
8241
8242  006322                            MASHP:
8243  006322                            MASHN:
8244  006322  177740                            .WORD BS128             ;IP1 MASK       (LEN)
8246  006324  176000                            .WORD BS4               ;IP2            (ADR)
8247  006326  170000                            .WORD BS0               ;IP3            (RD,SC)
8248  006330  177740                            .WORD BS128             ;IP4            (LEN)
8249  006332  004000                            .WORD MP04000           ;IP5            (ADR)
8257  006334  152525                            .WORD DSCPTR            ;IP6            (DESC POINTER)
8258  006336  125252                            .WORD EOT
```

```
8288
8289                                    .SBTTL          CIS INST FLOW TABLES
8290                                    ;CIS INSTRUCTION FLOW TABLES
8291                                    ;
8292  006340                            XMOVC:                          ;MOVC FLOW TABLE S1=SRC, S2=DST
8293  006340                            XMOVRC:                         ;MOVRC FLOW TABLE S1=SRC, S2=DST
8294  006340  151600                           .WORD 151600            ;LOAD SPECIAL HANDLING WORD FROM PTP16
8295  006342  010100                           .WORD 010100            ;LOAD TR0 FROM PTP01
8296  006344  010201                           .WORD 010201            ;LOAD TR1 FROM PTP02
8297  006346  010302                           .WORD 010302            ;LOAD TR2 FROM PTP03
8298  006350  010504                           .WORD 010504            ;LOAD TR4 FROM PTP05
8299  006352  020403                           .WORD 020403            ;GENERATE TR3 FROM PTP04
8300  006354  031001                           .WORD 031001            ;VERIFY THAT S1.ADR-S1.SURR.LEN >=20
8301  006356  031303                           .WORD 031303            ;VERIFY THAT S2.ADR-S2.SURR.LEN >= 20
8302  006360  041001                           .WORD 041001            ;VERIFY THAT S1.ADR+S1.LEN+S1.SURR.LEN < TBLEN
8303  006362  041323                           .WORD 041323            ;VERIFY THAT S2.ADR+S2.LEN+S2.SURR.LEN < TBLEN
8304  006364  051300                           .WORD 051300            ;ADD TEST BUFFER ADDRESS TO TR1 AND TR3
8305  006366  060000                           .WORD 060000            ;INITIALIZE TEST BUFFER
8306  006370  071123                           .WORD 071123            ;INSERT S2 & S2.SURR STRINGS IN TEST BUFFER
8307  006372  001312                           .WORD 001312
8308  006374  070601                           .WORD 070601            ;INSERT S1 & S1.SURR STRINGS IN TEST BUFFER
8309  006376  001007                           .WORD 001007
8310  006400  100000                           .WORD 100000            ;COPY TEST BUFFER INTO EMULATION BUFFER
8311  006402  111300                           .WORD 111300            ;SETUP EMULATION OPERANDS & EMULATE INST
8312  006404  122400                           .WORD 122400            ;SETUP CC & REGS AND EXECUTE CIS INST.
8313  006406  001300                           .WORD 001300
8314  006410  000000                           .WORD 000000
8315  006412  007000                           .WORD 007000
8316  006414  137000                           .WORD 137000            ;COMPARE RESULTS
8317  006416  140000                           .WORD 140000            ;UPDATE PTRS FOR NEXT TEST CONDITION.
8318                                                                    ;  RETURN TO START EXECUTING NEXT TEST CONDITION.
8319
```

```
8321
8322  006420
8323  006420  151600          ;
8324  006422  010100  XMOVTC:          .WORD 151600    ;MOVRC FLOW TABLE S1=SRC, S2=DST
8325  006424  010201                   .WORD 010100    ;LOAD SPECIAL HANDLING WORD FROM PTP16
8326  006426  010302                   .WORD 010201    ;LOAD TR0 FROM PTP01
8327  006430  010504                   .WORD 010302    ;LOAD TR1 FROM PTP02
8328  006432  011505                   .WORD 010504    ;LOAD TR2 FROM PTP03
8329  006434  020403                   .WORD 011505    ;LOAD TR4 FROM PTP05
8330  006436  031001                   .WORD 020403    ;LOAD TR5 FROM PTP15 (TRANSLATION TABLE)
8331  006440  031303                   .WORD 031001    ;GENERATE TR3 FROM PTP04
8332  006442  041001                   .WORD 031303    ;VERIFY THAT S1.ADR-S1.SURR.LEN >=20
8333  006444  041323                   .WORD 041001    ;VERIFY THAT S2.ADR-S2.SURR.LEN >= 20
8334  006446  051300                   .WORD 041323    ;VERIFY THAT S1.ADR+S1.LEN+S1.SURR.LEN < TBLEN
8335  006450  060000                   .WORD 051300    ;VERIFY THAT S2.ADR+S2.LEN+S2.SURR.LEN < TBLEN
8336  006452  071123                   .WORD 060000    ;ADD TEST BUFFER ADDRESS TO TR1 AND TR3
8337  006454  001312                   .WORD 071123    ;INITIALIZE TEST BUFFER
8338  006456  070601                   .WORD 001312    ;INSERT S2 & S2.SURR STRINGS IN TEST BUFFER
8339  006460  001007                   .WORD 070601
8340  006462  100000                   .WORD 001007    ;INSERT S1 & S1.SURR STRINGS IN TEST BUFFER
8341  006464  111300                   .WORD 100000
8342  006466  122450                   .WORD 111300    ;COPY TEST BUFFER INTO EMULATION BUFFER
8343  006470  001300                   .WORD 122450    ;SETUP EMULATION OPERANDS & EMULATE INST
8344  006472  000000                   .WORD 001300    ;SETUP CC & REGS AND EXECUTE CIS INST.
8345  006474  007000                   .WORD 000000
8346  006476  137000                   .WORD 007000
8347  006500  140000                   .WORD 137000
8348                                   .WORD 140000    ;COMPARE RESULTS
8349                                                   ;UPDATE PTRS FOR NEXT TEST CONDITION.
                                                       ;  RETURN TO START EXECUTING NEXT TEST CONDITION.
```

```
8351
8352
8353  006502                          XCMPC:
8354  006502  151500                          .WORD 151500        ;CMPC FLOW TABLE S1=SRC1, S2=SRC2
8355  006504  010100                          .WORD 010100        ;LOAD SPECIAL HANDLING WORD FROM PTP15
8356  006506  010201                          .WORD 010201        ;LOAD TR0 FROM PTP01
8357  006510  010302                          .WORD 010302        ;LOAD TR1 FROM PTP02
8358  006512  010504                          .WORD 010504        ;LOAD TR2 FROM PTP03
8359  006514  020403                          .WORD 020403        ;LOAD TR4 FROM PTP05
8360  006516  031001                          .WORD 031001        ;GENERATE TR3 FROM PTP04
8361  006520  031303                          .WORD 031303        ;VERIFY THAT S1.ADR-S1.SURR.LEN >=20
8362  006522  041001                          .WORD 041001        ;VERIFY THAT S2.ADR-S2.SURR.LEN >= 20
8363  006524  041323                          .WORD 041323        ;VERIFY THAT S1.ADR+S1.LEN+S1.SURR.LEN < TBLEN
8364  006526  051300                          .WORD 051300        ;VERIFY THAT S2.ADR+S2.LEN+S2.SURR.LEN < TBLEN
8365  006530  060000                          .WORD 060000        ;ADD TEST BUFFER ADDRESS TO TR1 AND TR3
8366  006532  071123                          .WORD 071123        ;INITIALIZE TEST BUFFER
8367  006534  001312                          .WORD 001312        ;INSERT S2 & S2.SURR STRINGS IN TEST BUFFER
8368  006536  070601                          .WORD 070601
8369  006540  001007                          .WORD 001007        ;INSERT S1 & S1.SURR STRINGS IN TEST BUFFER
8370  006542  100000                          .WORD 100000
8371  006544  111300                          .WORD 111300        ;COPY TEST BUFFER INTO EMULATION BUFFER
8372  006546  122400                          .WORD 122400        ;SETUP EMULATION OPERANDS & EMULATE INST
8373  006550  001300                          .WORD 001300        ;SETUP CC & REGS AND EXECUTE CIS INST.
8374  006552  000000                          .WORD 000000
8375  006554  007000                          .WORD 007000
8376  006556  131370                          .WORD 131370        ;COMPARE RESULTS
8377  006560  007000                          .WORD 007000
8378  006562  140000                          .WORD 140000        ;UPDATE PTRS FOR NEXT TEST CONDITION.
8379                                                              ;  RETURN TO START EXECUTING NEXT TEST CONDITION.
```

```
8381
8382  006564
8383  006564  151500          XMATCHC:    .WORD 151500    ;MATCHC FLOW TABLE S1=SRC, S2=OBJ
8384  006566  010300                      .WORD 010300    ;LOAD SPECIAL HANDLING WORD FROM PTP15
8385  006570  010102                      .WORD 010102    ;LOAD TR0 FROM PTP03
8386  006572  010203                      .WORD 010203    ;LOAD TR2 FROM PTP01
8387  006574  010504                      .WORD 010504    ;LOAD TR3 FROM PTP02
8388  006576  020401                      .WORD 020401    ;LOAD TR4 FROM PTP05
8389  006600  031301                      .WORD 031301    ;GENERATE TR1 FROM PTP04
8390  006602  031003                      .WORD 031003    ;VERIFY THAT S1.ADR-S1.SURR.LEN >=20
8391  006604  041301                      .WORD 041301    ;VERIFY THAT S2.ADR-S2.SURR.LEN >= 20
8392  006606  041023                      .WORD 041023    ;VERIFY THAT S1.ADR+S1.LEN+S1.SURR.LEN < TBLEN
8393  006610  051300                      .WORD 051300    ;VERIFY THAT S2.ADR+S2.LEN+S2.SURR.LEN < TBLEN
8394  006612  060000                      .WORD 060000    ;ADD TEST BUFFER ADDRESS TO TR1 AND TR3
8395  006614  070623                      .WORD 070623    ;INITIALIZE TEST BUFFER
8396  006616  001007                      .WORD 001007    ;INSERT S2 & S2.SURR STRINGS IN TEST BUFFER
8397  006620  071101                      .WORD 071101
8398  006622  001312                      .WORD 001312    ;INSERT S1 & S1.SURR STRINGS IN TEST BUFFER
8399  006624  100000                      .WORD 100000
8400  006626  111300                      .WORD 111300    ;COPY TEST BUFFER INTO EMULATION BUFFER
8401  006630  122000                      .WORD 122000    ;SETUP EMULATION OPERANDS & EMULATE INST
8402  006632  001300                      .WORD 001300    ;SETUP CC & REGS AND EXECUTE CIS INST.
8403  006634  000000                      .WORD 000000
8404  006636  000170                      .WORD 000170
8405  006640  131370                      .WORD 131370    ;COMPARE RESULTS
8406  006642  001700                      .WORD 001700
8407  006644  140000                      .WORD 140000    ;UPDATE PTRS FOR NEXT TEST CONDITION.
8408                                                      ;  RETURN TO START EXECUTING NEXT TEST CONDITION.
```

```
 8410
 8411
 8412  006646                    XCMPP:                  ;CMPP FLOW TABLE S1=SRC1, S2=SRC2
 8413  006646                    XCMPN:                  ;CMPN FLOW TABLE S1=SRC1, S2=SRC2
 8414  006646  151500                    .WORD 151500    ;LOAD SPECIAL HANDLING FROM PTP15
 8415  006650  010110                    .WORD 010110    ;LOAD TR0 FROM PTP01
 8416  006652  010201                    .WORD 010201    ;LOAD TR1 FROM PTP02
 8417  006654  010312                    .WORD 010312    ;LOAD TR2 FROM PTP03
 8418  006656  010504                    .WORD 010504    ;LOAD TR4 FROM PTP05
 8419  006660  020403                    .WORD 020403    ;GENERATE TR3 FROM PTP04
 8420  006662  031001                    .WORD 031001    ;VERIFY THAT S1.ADR-S1.SURR.LEN >=20
 8421  006664  031303                    .WORD 031303    ;VERIFY THAT S2.ADR-S2.SURR.LEN >= 20
 8422  006666  041001                    .WORD 041001    ;VERIFY THAT S1.ADR+S1.LEN+S1.SURR.LEN < TBLEN
 8423  006670  041323                    .WORD 041323    ;VERIFY THAT S2.ADR+S2.LEN+S2.SURR.LEN < TBLEN
 8424  006672  051300                    .WORD 051300    ;ADD TEST BUFFER ADDRESS TO TR1 AND TR3
 8425  006674  060000                    .WORD 060000    ;INITIALIZE TEST BUFFER
 8426  006676  075123                    .WORD 075123    ;INSERT S2 & S2.SURR STRINGS IN TEST BUFFER
 8427  006700  074601                    .WORD 074601    ;INSERT S1 & S1.SURR STRINGS IN TEST BUFFER
 8428  006702  100000                    .WORD 100000    ;COPY TEST BUFFER INTO EMULATION BUFFER
 8429  006704  111300                    .WORD 111300    ;SETUP EMULATION OPERANDS & EMULATE INST
 8430  006706  122000                    .WORD 122000    ;SETUP CC & REGS AND EXECUTE CIS INST.
 8431  006710  001300                    .WORD 001300
 8432  006712  000000                    .WORD 000000
 8433  006714  007000                    .WORD 007000
 8434  006716  137000                    .WORD 137000    ;COMPARE RESULTS
 8435  006720  140000                    .WORD 140000    ;UPDATE PTRS FOR NEXT TEST CONDITION.
 8436                                                    ;  RETURN TO START EXECUTING NEXT TEST CONDITION.
```

```
 8438
 8439  006722                    XASHP:                          ;ASHP FLOW TABLE
 8440  006722                    XASHN:                          ;ASHN FLOW TABLE
 8441  006722  151500                    .WORD 151500            ;LOAD SPECIAL HANDLING FROM PTP15
 8442  006724  010110                    .WORD 010110            ;LOAD TR0 FROM PTP01
 8443  006726  010201                    .WORD 010201            ;LOAD TR1 FROM PTP02
 8444  006730  010422                    .WORD 010422            ;LOAD TR2 FROM PTP04
 8445  006732  010304                    .WORD 010304            ;LOAD TR4 FROM PTP03
 8446  006734  020503                    .WORD 020503            ;GENERATE TR3 FROM PTP05
 8447  006736  031001                    .WORD 031001            ;VERIFY THAT SRC.ADR-SRC.SURR.LEN >= 20
 8448  006740  031303                    .WORD 031303            ;VERIFY THAT DST.ADR-DST.SURR.LEN >= 20
 8449  006742  041001                    .WORD 041001            ;VERIFY THAT SRC.ADR+SRC.LEN+SRC.SURR.LEN <TBLEN
 8450  006744  041323                    .WORD 041323            ;VERIFY THAT DST.ADR+DST.LEN+DST.SURR.LEN <TBLEN
 8451  006746  051300                    .WORD 051300            ;ADD TEST BUFFER ADDRESS TO TR1 & TR5
 8452  006750  060000                    .WORD 060000            ;INITIALIZE TEST BUFFER
 8453  006752  071123                    .WORD 071123            ;INSERT DST & DST.SURR STRINGS IN TEST BUFFER
 8454  006754  001312                    .WORD 001312
 8455  006756  074601                    .WORD 074601            ;INSERT SRC IN TST BUFFER
 8456  006760  100000                    .WORD 100000            ;COPY TEST BUFFER INTO EMULATION BUFFER
 8457  006762  111300                    .WORD 111300            ;SETUP EMULATION OPERANDS & EXECUTE INST
 8458  006764  122400                    .WORD 122400            ;SETUP CC & REGS AND EXECUTE CIS INST
 8459  006766  001300                    .WORD 001300
 8460  006770  000000                    .WORD 000000
 8461  006772  007000                    .WORD 007000
 8462  006774  133700                    .WORD 133700            ;COMPARE RESULTS
 8463  006776  007000                    .WORD 007000
 8464  007000  140000                    .WORD 140000            ;UPDATE PTRS FOR NEXT TEST CONDITION
 8465                                                            ;  AND RETURN TO START EXECUTING NEXT
 8466                                                            ;  TEST CONDITION
```

```
 8468
 8469
 8470
 8471  007002                          XLOCC:                          ;LOCC FLOW TABLE
 8472  007002                          XSKPC:                          ;SKPC FLOW TABLE
 8473  007002  150700                          .WORD 150700            ;LOAD SPECIAL HANDLING WORD FROM PTP07
 8474  007004  010100                          .WORD 010100            ;LOAD TR0 FROM PTP01
 8475  007006  010201                          .WORD 010201            ;LOAD TR1 FROM PTP02
 8476  007010  010304                          .WORD 010304            ;LOAD TR4 FROM PTP03
 8477  007012  030601                          .WORD 030601            ;VERIFY THAT SRC.ADR-SRC.SURR.LEN >=20
 8478  007014  040601                          .WORD 040601            ;VERIFY THAT SRC.ADR+SRC.LEN+SRC.SURR.LEN < TBLEN
 8479  007016  051000                          .WORD 051000            ;ADD TEST BUFFER ADDRESS TO TR1
 8480  007020  060000                          .WORD 060000            ;INITIALIZE TEST BUFFER
 8481  007022  070401                          .WORD 070401            ;INSERT SRC & SRC SURR STRINGS IN BUFFER
 8482  007024  000605                          .WORD 000605
 8483  007026  100000                          .WORD 100000            ;COPY TEST BUFFER INTO EMULATION BUFFER
 8484  007030  111000                          .WORD 111000            ;SETUP EMULATION OPERANDS & EMULATE INST.
 8485  007032  121400                          .WORD 121400            ;SETUP CC & REGS AND EXECUTE CIS INST
 8486  007034  001000                          .WORD 001000
 8487  007036  000000                          .WORD 000000
 8488  007040  000170                          .WORD 000170
 8489  007042  131700                          .WORD 131700            ;COMPARE RESULTS
 8490  007044  001700                          .WORD 001700
 8491  007046  140000                          .WORD 140000            ;UPDATE POINTERS AND RETURN FOR NEXT
 8492                                                                  ;  TEST CONDITION.
 8493
```

```
                                XADDP:                  ;ADDP FLOW TABLE
                                XADDN:                  ;ADDN FLOW TABLE
                                XSUBP:                  ;SUBP FLOW TABLE
                                XSUBN:                  ;SUBN FLOW TABLE
                                XMULP:                  ;MULP FLOW TABLE
                                XDIVP:                  ;DIVP FLOW TABLE
007050  152100                          .WORD 152100    ;LOAD SPECIAL HANDLING FROM PTP21
007052  010110                          .WORD 010110    ;LOAD TR0 FROM PTP01
007054  010201                          .WORD 010201    ;LOAD TR1 FROM PTP02
007056  010322                          .WORD 010322    ;LOAD TR2 FROM PTP03
007060  010534                          .WORD 010534    ;LOAD TR4 FROM PTP05
007062  010605                          .WORD 010605    ;TYPE 0 USE ONLY - LOAD TR5 FROM PTP06
007064  020403                          .WORD 020403    ;GENERATE TR3 & TR5 FROM PTP04
007066  031101                          .WORD 031101    ;VERIFY THAT SRC1.ADR-SRC1.SURR.LEN >= 20
007070  031403                          .WORD 031403    ;VERIFY THAT SRC2.ADR-SRC2.SURR.LEN >= 20
007072  031705                          .WORD 031705    ;VERIFY THAT DST.ADR-DST.SURR.LEN >=20
007074  041101                          .WORD 041101    ;VERIFY THAT SRC1.ADR+SRC1.LEN+SRC1.SURR.LEN < TBLEN
007076  041423                          .WORD 041423    ;VERIFY THAT SRC2.ADR+SRC2.LEN+SRC2.SURR.LEN < TBLEN
007100  041745                          .WORD 041745    ;VERIFY THAT DST.ADR+DST.LEN+DST.SURR.LEN < TBLEN
007102  051350                          .WORD 051350    ;ADD TEST BUFFER ADDRESS TO TR1,TR3, & TR5
007104  060000                          .WORD 060000    ;INITIALIZE TEST BUFFER
007106  071545                          .WORD 071545    ;INSERT DST & DST.SURR STRINGS IN TEST BUFFER
007110  001716                          .WORD 001716
007112  074701                          .WORD 074701    ;INSERT SRC1 IN TEST BUFFER
007114  075223                          .WORD 075223    ;INSERT SRC2 IN TEST BUFFFER
007116  100000                          .WORD 100000    ;COPY TEST BUFFER INTO EMULATION BUFFER
007120  111350                          .WORD 111350    ;SETUP EMULATION OPERANDS & EMULATE INST
007122  123000                          .WORD 123000    ;SETUP CC & REGS AND EXECUTE CIS INST.
007124  001350                          .WORD 001350
007126  000000                          .WORD 000000
007130  007000                          .WORD 007000
007132  135700                          .WORD 135700    ;COMPARE RESULTS
007134  007000                          .WORD 007000
007136  140000                          .WORD 140000    ;UPDATE POINTERS FOR NEXT TEST CONDITION
                                                        ;  AND RETURN TO START EXECUTING NEXT
                                                        ;  TEST CONDITION
```

```
8533
8534  007140                    XSCANC:                 ;SCANC FLOW TABLE
8535  007140                    XSPANC:                 ;SPANC FLOW TABLE
8536  007140  151500                    .WORD 151500    ;LOAD SPECIAL HANDLING WORD FROM PTP15
8537  007142  010100                    .WORD 010100    ;LOAD TR0 FROM PTP01
8538  007144  010201                    .WORD 010201    ;LOAD TR1 FROM PTP02
8539  007146  010302                    .WORD 010302    ;LOAD TR2 FROM PTP03
8540  007150  010303                    .WORD 010303    ;LOAD TR3 FROM PTP03 (TR2 & TR3 CONTAIN TABLE LEN)
8541  007152  010404                    .WORD 010404    ;LOAD TR4 FROM PTP04
8542  007154  020505                    .WORD 020505    ;GENERATE TR5 FROM PTP05
8543  007156  031001                    .WORD 031001    ;VERIFY THAT SRC.ADR - SRC.SURR.LEN > = 20.
8544  007160  031305                    .WORD 031305    ;VERIFY THAT TABLE.ADR - TABLE.SURR.LEN > = 20
8545  007162  041001                    .WORD 041001    ;VERIFY THAT SRC.ADR+SRC.LEN+SRC.SURR.LEN<TBLEN
8546  007164  041325                    .WORD 041325    ;VERIFY THAT TABLE.ADR+256+TABLE SURR LEN<TBLEN
8547  007166  051500                    .WORD 051500    ;ADD TEST BUFFER ADDRESS TO TR1 AND TR5
8548  007170  060000                    .WORD 060000    ;INITIALIZE TEST BUFFER
8549  007172  071125                    .WORD 071125    ;INSERT TABLE & TABLE SURR IN BUFFER
8550  007174  070601                    .WORD 070601    ;INSERT SRC & SRC SURR STRINGS IN BUFFER
8551  007176  001007                    .WORD 001007
8552  007200  100000                    .WORD 100000    ;COPY TEST BUFFER INTO EMULATION BUFFER
8553  007202  111500                    .WORD 111500    ;SETUP EMULATION OPERANDS & EMULATE INST
8554  007204  122000                    .WORD 122000    ;SETUP CC REGS & EXECUTE CIS INST
8555  007206  001500                    .WORD 001500
8556  007210  000000                    .WORD 000000
8557  007212  000170                    .WORD 000170
8558  007214  131570                    .WORD 131570    ;COMPARE RESULTS
8559  007216  001700                    .WORD 001700
8560  007220  140000                    .WORD 140000    ;UPDATE PTRS FROM NEXT TEST CONDITION
8561
```

```
 8563
 8564
 8565  007222                    XCVTPN:                 ;CVTPN FLOW TABLE
 8566  007222                    XCVTNP:                 ;CVTNP FLOW TABLE
 8567  007222  151400                    .WORD 151400    ;LOAD SPECIAL HANDLING FROM PTP14
 8568  007224  010110                    .WORD 010110    ;LOAD TR0 FROM PTP01
 8569  007226  010201                    .WORD 010201    ;LOAD TR1 FROM PTP02
 8570  007230  010322                    .WORD 010322    ;LOAD TR2 FROM PTP03
 8571  007232  020403                    .WORD 020403    ;GENERATE TR3 FROM PTP04
 8572  007234  030701                    .WORD 030701    ;VERIFY THAT SRC.ADR-SRC.SURR.LEN>=20
 8573  007236  031203                    .WORD 031203    ;VERIFY THAT DST.ADR-DST.SURR.LEN>=20
 8574  007240  040701                    .WORD 040701    ;VERIFY THAT SRC.ADR+SRC.LEN+SRC.SURR.LEN<TBLEN
 8575  007242  041223                    .WORD 041223    ;VERIFY THAT DST.ADR+DST.LEN+DST.SURR.LEN<TBLEN
 8576  007244  051300                    .WORD 051300    ;ADD TEST BUFFER ADDRESS TO TR1 & TR3
 8577  007246  060000                    .WORD 060000    ;INITIALIZE TEST BUFFER
 8578  007250  071023                    .WORD 071023    ;INSERT DST & DST SURR STRINGS IN BUFFER
 8579  007252  001211                    .WORD 001211
 8580  007254  074501                    .WORD 074501    ;INSERT SRC  STRING IN BUFFER
 8581  007256  100000                    .WORD 100000    ;COPY TEST BUFFER INTO EMULATION BUFFER
 8582  007260  111300                    .WORD 111300    ;SETUP EMULATION OPERANDS & EMULAT INST.
 8583  007262  122000                    .WORD 122000    ;SETUP CC REGS & EXECUTE CIS INST.
 8584  007264  001300                    .WORD 001300
 8585  007266  000000                    .WORD 000000
 8586  007270  007000                    .WORD 007000
 8587  007272  133700                    .WORD 133700    ;COMPARE RESULTS
 8588  007274  007000                    .WORD 007000
 8589  007276  140000                    .WORD 140000    ;UPDATE PTRS FROM NEXT TEST CONDITION
 8590
```

```
                                        XCVTLP:                         ;CVTLP FLOW TABLE
                                        XCVTLN:                         ;CVTLN FLOW TABLE
007300  151000                                  .WORD 151000              ;LOAD SPECIAL HANDLING FROM PTP10
007302  010102                                  .WORD 010102              ;LOAD TR2 FROM PTP01
007304  010203                                  .WORD 010203              ;LOAD TR3 FROM PTP02
007306  010310                                  .WORD 010310              ;LOAD TR0 FROM PTP03
007310  010401                                  .WORD 010401              ;LOAD TR1 FROM PTP04
007312  030701                                  .WORD 030701              ;VERIFY THAT DST.ADR-DST.SURR.LEN>=20
007314  040701                                  .WORD 040701              ;VERIFY THAT DST.ADR+DST.LEN+DST.SURR.LEN<TBLEN
007316  051000                                  .WORD 051000              ;ADD TEST BUFFER ADDRESS TO TR1
007320  060000                                  .WORD 060000              ;INITIALIZE TEST BUFFER
007322  070501                                  .WORD 070501              ;INSERT DST & DST SURR STRINGS IN BUFFER
007324  000706                                  .WORD 000706
007326  100000                                  .WORD 100000              ;COPY TEST BUFFER INTO EMULATION BUFFER
007330  111000                                  .WORD 111000              ;SETUP EMULATION OPERANDS & EMULATE INST
007332  122000                                  .WORD 122000              ;SETUP CC REGS & EXECUTE CIS INST
007334  001300                                  .WORD 001300
007336  000000                                  .WORD 000000
007340  007000                                  .WORD 007000
007342  131700                                  .WORD 131700              ;COMPARE RESULTS
007344  007000                                  .WORD 007000
007346  140000                                  .WORD 140000              ;UPDATE PTRS FOR NEXT TEST CONDITION
```

```
 8620
 8621
 8622  007350                          XCVTPL:                 ;CVTPL FLOW TABLE
 8623  007350                          XCVTNL:                 ;CVTNL FLOW TABLE
 8624  007350  150700                          .WORD 150700    ;LOAD SPECIAL HANDLING FROM PTP07
 8625  007352  010110                          .WORD 010110    ;LOAD TR0 FROM PTP01
 8626  007354  010201                          .WORD 010201    ;LOAD TR1 FROM PTP02
 8627  007356  010604                          .WORD 010604    ;LOAD TR4 FROM PTP06
 8628  007360  030501                          .WORD 030501    ;VERIFY THAT SRC.ADR-SRC.SURR.LEN.+20
 8629  007362  040501                          .WORD 040501    ;VERIFY THAT SRC.ADR+SRC.LEN+SRC.SURR.LEN<TBLEN
 8630  007364  051000                          .WORD 051000    ;ADD TEST BUFFER ADDRESS TO TR1
 8631  007366  060000                          .WORD 060000    ;INITIALIZE TEST BUFFER
 8632  007370  074301                          .WORD 074301    ;INSERT SRC  STRING IN TEST BUFFER
 8633  007372  100000                          .WORD 100000    ;COPY TEST BUFFER INTO EMULATION BUFFER
 8634  007374  111000                          .WORD 111000    ;SETUP EMULATION OPERANDS & EMULATE INST.
 8635  007376  122000                          .WORD 122000    ;SETUP CC REGS & EXECUTE CIS INST
 8636  007400  001000                          .WORD 001000
 8637  007402  007300                          .WORD 007300
 8638  007404  007000                          .WORD 007000
 8639  007406  137000                          .WORD 137000    ;COMPARE RESULTS
 8640  007410  140000                          .WORD 140000    ;UPDATE PTRS FOR NEXT TEST CONDITION
 8641
 8642
```

```
8644  007412                    XL2D:                       ;L2DR FLOW TABLE
8645  007412                    XL3D:                       ;L3DR FLOW TABLE
8646  007412  010100                    .WORD 010100        ;LOAD TR0 FROM PTP01
8647  007414  010201                    .WORD 010201        ;LOAD TR1 FROM PTP02
8648  007416  010302                    .WORD 010302        ;LOAD TR2 FROM PTP03
8649  007420  010403                    .WORD 010403        ;LOAD TR3 FROM PTP04
8650  007422  010504                    .WORD 010504        ;LOAD TR4 FROM PTP05
8651  007424  010605                    .WORD 010605        ;LOAD TR5 FROM PTP06
8652  007426  060000                    .WORD 060000        ;INITIALIZE TEST BUFFER
8653  007430  020700                    .WORD 020700        ;GENERATE TRN FROM PTP07
8654  007432  100000                    .WORD 100000        ;COPY TEST BUFFER INTO EMUL. BUFFER
8655  007434  110000                    .WORD 110000        ;SETUP EMUL. OPERANDS & EMUL INST.
8656  007436  120000                    .WORD 120000        ;SETUP CC & REGS & EXECUTE CIS INST.
8657  007440  137000                    .WORD 137000        ;COMPARE RESULTS
8658  007442  140000                    .WORD 140000        ;UPDATE PTRS FOR NEXT TEST CONDITION.
```

```
                                        .SBTTL  GLOBAL TEXT SECTION
                                        ; FORMAT STATEMENTS USED IN PRINT CALLS
                                        ;
                                        ;
                                        ;MESSAGES
007444 040445 046440 053117  AMOVC:  .ASCIZ  /%A MOVC/
007452 000103
007454 040445 046440 053117  AMOVRC: .ASCIZ  /%A MOVRC/
007462 041522 000
007465 045 020101 047515  AMOVTC: .ASCIZ  /%A MOVTC/
007472 052126 000103
007476 040445 046040 041517  ALOCC:  .ASCIZ  /%A LOCC/
007504 000103
007506 040445 051440 050113  ASKPC:  .ASCIZ  /%A SKPC/
007514 000103
007516 040445 051440 040503  ASCANC: .ASCIZ  /%A SCANC/
007524 041516 000
007527 045 020101 050123  ASPANC: .ASCIZ  /%A SPANC/
007534 047101 000103
007540 040445 041440 050115  ACMPC:  .ASCIZ  /%A CMPC/
007546 000103
007550 040445 046440 052101  AMATCHC:.ASCIZ  /%A MATC/
007556 000103
007560 040445 040440 042104  AADDN:  .ASCIZ  /%A ADDN/
007566 000116
007570 040445 051440 041125  ASUBN:  .ASCIZ  /%A SUBN/
007576 000116
007600 040445 041440 050115  ACMPN:  .ASCIZ  /%A CMPN/
007606 000116
007610 040445 041440 052126  ACVTNL: .ASCIZ  /%A CVTNL/
007616 046116 000
007621 045 020101 053103  ACVTPN: .ASCIZ  /%A CVTPN/
007626 050124 000116
007632 040445 041440 052126  ACVTNP: .ASCIZ  /%A CVTNP/
007640 050116 000
007643 045 020101 051501  AASHN:  .ASCIZ  /%A ASHN/
007650 047110 000
007653 045 020101 053103  ACVTLN: .ASCIZ  /%A CVTLN/
007660 046124 000116
007664 040445 040440 042104  AADDP:  .ASCIZ  /%A ADDP/
007672 000120
007674 040445 051440 041125  ASUBP:  .ASCIZ  /%A SUBP/
007702 000120
007704 040445 041440 050115  ACMPP:  .ASCIZ  /%A CMPP/
007712 000120
007714 040445 041440 052126  ACVTPL: .ASCIZ  /%A CVTPL/
007722 046120 000
007725 045 020101 052515  AMULP:  .ASCIZ  /%A MULP/
007732 050114 000
007735 045 020101 044504  ADIVP:  .ASCIZ  /%A DIVP/
007742 050126 000
007745 045 020101 051501  AASHP:  .ASCIZ  /%A ASHP/
007752 050110 000
```

```
 8690  007755    045  020101  053103  ACVTLP: .ASCIZ  /%A CVTLP/
       007762  046124  000120
 8691  007766  040445  046040  042062  AL2D:   .ASCIZ  /%A L2D%O1/
       007774  047445  000061
 8692  010000  040445  046040  042063  AL3D:   .ASCIZ  /%A L3D%O1/
       010006  047445  000061
 8693
 8694  010012  051445  031462  040445  FORM1:  .ASCIZ  /%S23%ASL%S5%ASA%S5%ADL%S5%ADA%S5%AF%S24%ANZVC%N/
       010020  046123  051445  022465
       010026  051501  022501  032523
       010034  040445  046104  051445
       010042  022465  042101  022501
       010050  032523  040445  022506
       010056  031123  022464  047101
       010064  053132  022503  000116
 8695  010072  051445  031462  040445  FORM2:  .ASCIZ  /%S23%ASL%S5%ASA%S5%ADL%S5%ADA%S5%AF%S6%AT%S15%ANZVC%N/
       010100  046123  051445  022465
       010106  051501  022501  032523
       010114  040445  046104  051445
       010122  022465  042101  022501
       010130  032523  040445  022506
       010136  033123  040445  022524
       010144  030523  022465  047101
       010152  053132  022503  000116
 8696  010160  051445  031462  040445  FORM3:  .ASCIZ  /%S23%ASL%S5%ASA%S23%ACHAR%S21%ANZVC%N/
       010166  046123  051445  022465
       010174  051501  022501  031123
       010202  022463  041501  040510
       010210  022522  031123  022461
       010216  047101  053132  022503
       010224  000116
 8697  010226  051445  031462  040445  FORM4:  .ASCIZ  /%S23%ASL%S5%ASA%S23%AMASK%S3%AT%S15%ANZVC%N/
       010234  046123  051445  022465
       010242  051501  022501  031123
       010250  022463  046501  051501
       010256  022513  031523  040445
       010264  022524  030523  022465
       010272  047101  053132  022503
       010300  000116
 8698  010302  051445  031462  040445  FORM5:  .ASCIZ  /%S23%AS1L%S4%AS1A%S4%AS2L%S4%AS2A%S4%AF%S24%ANZVC%N/
       010310  030523  022514  032123
       010316  040445  030523  022501
       010324  032123  040445  031123
       010332  022514  032123  040445
       010340  031123  022501  032123
       010346  040445  022506  031123
       010354  022464  047101  053132
       010362  022503  000116
 8699  010366  051445  031462  040445  FORM6:  .ASCIZ  /%S23%ASL%S5%ASA%S5%AOL%S5%AOA%S32%ANZVC%N/
       010374  046123  051445  022465
       010402  051501  022501  032523
       010410  040445  046117  051445
       010416  022465  047501  022501
       010424  031523  022462  047101
```

```
                010432  053132  022503  000116
 8700           010440  051445  031462  040445  FORM7:  .ASCIZ  /%S23%AS1L%S4%AS1A%S4%AS2L%S4%AS2A%S4%ADL%S5%ADA%S14%ANZVC%N/
                010446  030523  022514  032123
                010454  040445  030523  022501
                010462  032123  040445  031123
                010470  022514  032123  040445
                010476  031123  022501  032123
                010504  040445  046104  051445
                010512  022465  042101  022501
                010520  030523  022464  047101
                010526  053132  022503  000116
 8701           010534  051445  031462  040445  FORM8:  .ASCIZ  /%S23%AS1L%S4%AS1A%S4%AS2L%S4%AS2A%S32%ANZVC%N/
                010542  030523  022514  032123
                010550  040445  030523  022501
                010556  032123  040445  031123
                010564  022514  032123  040445
                010572  031123  022501  031523
                010600  022462  047101  053132
                010606  022503  000116
 8702           010612  051445  031462  040445  FORM9:  .ASCIZ  /%S23%ASL%S5%ASA%S5%AD.H%S4%AD.L%S32%ANZVC%N/
                010620  046123  051445  022465
                010626  051501  022501  032523
                010634  040445  027104  022510
                010642  032123  040445  027104
                010650  022514  031523  022462
                010656  047101  053132  022503
                010664  000116
 8703           010666  051445  031462  040445  FORM10: .ASCIZ  /%S23%ASL%S5%ASA%S5%ADL%S5%ADA%S32%ANZVC%N/
                010674  046123  051445  022465
                010702  051501  022501  032523
                010710  040445  046104  051445
                010716  022465  042101  022501
                010724  031523  022462  047101
                010732  053132  022503  000116
 8704           010740  051445  031462  040445  FORM11: .ASCIZ  /%S23%ASL%S5%ASA%S5%ADL%S5%ADA%S5%AR,S%S22%ANZVC%N/
                010746  046123  051445  022465
                010754  051501  022501  032523
                010762  040445  046104  051445
                010770  022465  042101  022501
                010776  032523  040445  026122
                011004  022523  031123  022462
                011012  047101  053132  022503
                011020  000116
 8705           011022  051445  031462  040445  FORM12: .ASCIZ  /%S23%ADL%S5%ADA%S5%AS.H%S4%AS.L%S32%ANZVC%N/
                011030  046104  051445  022465
                011036  042101  022501  032523
                011044  040445  027123  022510
                011052  032123  040445  027123
                011060  022514  031523  022462
                011066  047101  053132  022503
                011074  000116
 8706           011076  040445  044440  050116  INREG:  .ASCIZ  +%A INPUT   R0-R6,CC/ +
                011104  052125  020040  051040
                011112  026460  033122  041454
```

```
                011120  027503  000040
 8707           011124  040445  044440  050116  INMEM:  .ASCIZ  +%A INPUTS IN MEMORY/ +
                011132  052125  020123  047111
                011140  046440  046505  051117
                011146  027531  000040
 8708           011152  040445  042440  050130  EMOUT:  .ASCIZ  +%A EXP OUT R0-R6,CC/ +
                011160  047440  052125  051040
                011166  026460  033122  041454
                011174  027503  000040
 8709           011200  047445  022466  030523  FORM13: .ASCIZ  /%06%S1%06%S1%06%S1%06%S1%06%S1%06%S1%06%S1%Y4%N/
                011206  047445  022466  030523
                011214  047445  022466  030523
                011222  047445  022466  030523
                011230  047445  022466  030523
                011236  047445  022466  030523
                011244  047445  022466  030523
                011252  054445  022464  000116
 8710           011260  047445  022466  030523  FORM14: .ASCIZ  /%06%S1%06%S1%06%S1%06%S1%06%S1%06%S1%06%S1%Y4%N/
                011266  047445  022466  030523
                011274  047445  022466  030523
                011302  047445  022466  030523
                011310  047445  022466  030523
                011316  047445  022466  030523
                011324  047445  022466  030523
                011332  054445  022464  000116
 8711           011340  040445  040440  052103  ACOUT:  .ASCIZ  +%A ACT OUT R0-R6,CC/ +
                011346  047440  052125  051040
                011354  026460  033122  041454
                011362  027503  000040
 8712           011366  047445  022466  030523  FORM15: .ASCIZ  /%06%S1/
                011374     000
 8713           011375     045  033523     000  FORM16: .ASCIZ  /%S7/
 8714           011401     045  033123  022461  FORM17: .ASCIZ  /%S61%Y4/
                011406  032131     000
 8715           011411     045  032131     000  FORM18: .ASCIZ  /%Y4/
 8716           011415     045  022516  020101  EBUFO:  .ASCIZ  +%N%A EXP BUFFER %06%A/ %03%N+
                011422  054105  020120  052502
                011430  043106  051105  022440
                011436  033117  040445  020057
                011444  047445  022463  000116
 8717           011452  040445  040440  052103  ABUFO:  .ASCIZ  +%A ACT BUFFER %06%A/ %03+
                011460  041040  043125  042506
                011466  020122  047445  022466
                011474  027501  022440  031517
                011502     000
 8718           011503     015  041412  041475  QDISP:  .ASCIZ  <CR><LF>/C=CONT.;R=REPEAT TEST;S=RESTART;D=DISPLAY MEMORY;H=REPEAT & HAL
                011510  047117  027124  051073
                011516  051075  050105  040505
                011524  020124  042524  052123
                011532  051473  051075  051505
                011540  040524  052122  042073
                011546  042075  051511  046120
                011554  054501  046440  046505
                011562  051117  035531  036510
```

```
                011570  042522  042520  052101
                011576  023040  044040  046101
                011604  020124  052101  041440
                011612  051511  044440  051516
                011620  037524     000
 8719           011623     045  022516  041501  STKM1:  .ASCIZ  /%N%ACIS INST EXECUTION USED MORE THAN 64 LOCS ON STACK%N/
                011630  051511  044440  051516
                011636  020124  054105  041505
                011644  052125  047511  020116
                011652  051525  042105  046440
                011660  051117  020105  044124
                011666  047101  033040  020064
                011674  047514  051503  047440
                011702  020116  052123  041501
                011710  022513  000116
 8720           011714  047045  040445  044503  STKM2:  .ASCIZ  /%N%ACIS INST EXECUTION DESTROYED CONTENTS OF WORD AT STACK+2%N/
                011722  020123  047111  052123
                011730  042440  042530  052503
                011736  044524  047117  042040
                011744  051505  051124  054517
                011752  042105  041440  047117
                011760  042524  052116  020123
                011766  043117  053440  051117
                011774  020104  052101  051440
                012002  040524  045503  031053
                012010  047045     000
 8721           012013     045  022516  052101  CISQ:   .ASCIZ  /%N%ATRAP TO 10 OCCURRED ON CIS INST IN TEST #1. IS CISP PRESENT?%N/
                012020  040522  020120  047524
                012026  030440  020060  041517
                012034  052503  051122  042105
                012042  047440  020116  044503
                012050  020123  047111  052123
                012056  044440  020116  042524
                012064  052123  021440  027061
                012072  044440  020123  044503
                012100  050123  050040  042522
                012106  042523  052116  022477
                012114  000116
 8722           012116  047045  040445  051124  MMVMSG: .ASCIZ  /%N%ATRAP TO 250/
                012124  050101  052040  020117
                012132  032462  000060
 8723           012136  047045  040445  051124  TRAP4:  .ASCIZ  /%N%ATRAP TO 4/
                012144  050101  052040  020117
                012152  000064
 8724           012154  047045  040445  051124  TRAP10: .ASCIZ  /%N%ATRAP TO 10/
                012162  050101  052040  020117
                012170  030061     000
 8725           012173     045  022516  042501  HLTMSG: .ASCIZ  /%N%AERROR HALT/
                012200  051122  051117  044040
                012206  046101  000124
 8726           012212  047045  040445  044503  NOPROG: .ASCIZ  /%N%ACIS INST IS NOT MAKING PROGRESS%N/
                012220  020123  047111  052123
                012226  044440  020123  047516
                012234  020124  040515  044513
```

```
                012242  043516  050040  047522
                012250  051107  051505  022523
                012256  000116
 8727   012260  047045  040445  040514  LATEXC: .ASCIZ  /%N%ALATENCY EXCESSIVE%N/
        012266  042524  041516  020131
        012274  054105  042503  051523
        012302  053111  022505  000116
 8728   012310  040445  020040  052101  TRPINF: .ASCIZ  /%A  AT:%O6%A  MODE:%O1%A  D-EN:%B1%A  INST:%O6%A  INST CT:%D2%S1%D5%N/
        012316  022472  033117  040445
        012324  020040  047515  042504
        012332  022472  030517  040445
        012340  020040  026504  047105
        012346  022472  030502  040445
        012354  020040  047111  052123
        012362  022472  033117  040445
        012370  020040  047111  052123
        012376  041440  035124  042045
        012404  022462  030523  042045
        012412  022465  000116
 8729   012416  047045  040445  047105  ASK:    .ASCIZ  /%N%AENTER INSTRUCTION TO TEST <ALL>   /
        012424  042524  020122  047111
        012432  052123  052522  052103
        012440  047511  020116  047524
        012446  052040  051505  020124
        012454  040474  046114  020076
        012462  020040     000
 8730   012465     045  022516  051101  ASKRM:  .ASCIZ  /%N%ARANDOM EXERCISE MODE (Y OR N) ?  /
        012472  047101  047504  020115
        012500  054105  051105  044503
        012506  042523  046440  042117
        012514  020105  054450  047440
        012522  020122  024516  037440
        012530  020040     000
 8731   012533     045  022516  050101  ASKMOD: .ASCIZ  /%N%APROCESSOR TEST MODE (K=KERNEL,S=SUPV,U=USER)?  /
        012540  047522  042503  051523
        012546  051117  052040  051505
        012554  020124  047515  042504
        012562  024040  036513  042513
        012570  047122  046105  051454
        012576  051475  050125  026126
        012604  036525  051525  051105
        012612  037451  020040     000
 8732   012617     045  022516  046501  ASKMM:  .ASCIZ  /%N%AMEMORY MANAGEMENT (N=OFF,D=D-SPACE ENABLED,H=D-SPACE DISABLED)?  /
        012624  046505  051117  020131
        012632  040515  040516  042507
        012640  042515  052116  024040
        012646  036516  043117  026106
        012654  036504  026504  050123
        012662  041501  020105  047105
        012670  041101  042514  026104
        012676  036510  026504  050123
        012704  041501  020105  044504
        012712  040523  046102  042105
        012720  037451  020040     000
```

```
 8733  012725  045  022516  052101  ASKINT: .ASCIZ  /%N%ATEST INTERRUPTABILITY OF CIS INSTRUCTIONS (KW11-P REQUIRED) (Y OR N
       012732  051505  020124  047111
       012740  042524  051122  050125
       012746  040524  044502  044514
       012754  054524  047440  020106
       012762  044503  020123  047111
       012770  052123  052522  052103
       012776  047511  051516  024040
       013004  053513  030461  050055
       013012  051040  050505  044525
       013020  042522  024504  024040
       013026  020131  051117  047040
       013034  020051  000077
 8734  013040  047045  040445  047105  ASKST:  .ASCIZ  /%N%AENTER STOP TEST NUMBER (DECIMAL):%N/
       013046  042524  020122  052123
       013054  050117  052040  051505
       013062  020124  052516  041115
       013070  051105  024040  042504
       013076  044503  040515  024514
       013104  022472  000116
 8735  013110  047045  040445  047111  ASKSRC: .ASCIZ  /%N%AINTR SOURCE (R=LTC,N=KW11-P @100KHZ,C=KW11-P @10KHZ,Y=KW11-P EXT OS
       013116  051124  051440  052517
       013124  041522  020105  051050
       013132  046075  041524  047054
       013140  045475  030527  026461
       013146  020120  030500  030060
       013154  044113  026132  036503
       013162  053513  030461  050055
       013170  040040  030061  044113
       013176  026132  036531  053513
       013204  030461  050055  042440
       013212  052130  047440  041523
       013220  037451  000
 8736  013223  045  022516  040501  ASKDI:  .ASCIZ  /%N%AALLOW INTERRUPTING THE CIS INST EXECUTED DURING NORMAL INTR SERVICE
       013230  046114  053517  044440
       013236  052116  051105  052522
       013244  052120  047111  020107
       013252  044124  020105  044503
       013260  020123  047111  052123
       013266  042440  042530  052503
       013274  042524  020104  052504
       013302  044522  043516  047040
       013310  051117  040515  020114
       013316  047111  051124  051440
       013324  051105  044526  042503
       013332  000077
 8737  013334  047045  040445  040503  NOLAT:  .ASCIZ  /%N%ACAN'T TEST LATENCY - NEED 2ND KW11-P/
       013342  023516  020124  042524
       013350  052123  046040  052101
       013356  047105  054503  026440
       013364  047040  042505  020104
       013372  047062  020104  053513
       013400  030461  050055  000
 8738  013405  045  022516  041501  NOINT:  .ASCIZ  /%N%ACAN'T TEST INTERRUPTABILITY - NO CLOCK/
```

```
          013412  047101  052047  052040
          013420  051505  020124  047111
          013426  042524  051122  050125
          013434  040524  044502  044514
          013442  054524  026440  047040
          013450  020117  046103  041517
          013456  000113
 8739     013460  047045  040445  053523  SWNG:    .ASCIZ  /%N%ASWITCH ON CIS MODULE ACTS LIKE IT IS IN THE INCORRECT POSITION%N/
          013466  052111  044103  047440
          013474  020116  044503  020123
          013502  047515  052504  042514
          013510  040440  052103  020123
          013516  044514  042513  044440
          013524  020124  051511  044440
          013532  020116  044124  020105
          013540  047111  047503  051122
          013546  041505  020124  047520
          013554  044523  044524  047117
          013562  047045     000
 8740     013565     045  022516  041501  NOABO:   .ASCIZ  /%N%ACIS INST FAILED TO ABORT%N/
          013572  051511  044440  051516
          013600  020124  040506  046111
          013606  042105  052040  020117
          013614  041101  051117  022524
          013622  000116
 8741     013624  047045  040445  047520  POWMON: .ASCIZ  /%N%APOWER MONITOR BIT<0> SET IN CPU ERROR REG%N/       ;;REV-C
          013632  042527  020122  047515
          013640  044516  047524  020122
          013646  044502  036124  037060
          013654  051440  052105  044440
          013662  020116  050103  020125
          013670  051105  047522  020122
          013676  042522  022507  000116
 8742     013704  047045  040445  044514  KW11L:   .ASCIZ  /%N%ALINE CLOCK WILL BE USED FOR INTERRUPT SOURCE%N/
          013712  042516  041440  047514
          013720  045503  053440  046111
          013726  020114  042502  052440
          013734  042523  020104  047506
          013742  020122  047111  042524
          013750  051122  050125  020124
          013756  047523  051125  042503
          013764  047045     000
 8743     013767     015  040412  042104  AST:     .ASCIZ  <CR><LF>/ADDR(S)?/
          013774  024122  024523  000077
 8744     014002  047445  022466  027501  FORM19: .ASCIZ  +%06%A/%S3%03%S2%03%S2%03%S2%03+
          014010  051445  022463  031517
          014016  051445  022462  031517
          014024  051445  022462  031517
          014032  051445  022462  031517
          014040     000
 8745     014041     045  020101  020040  ADDHDR: .ASCIZ  /%A          0    1    2    3    4    5    6    7%N/
          014046  020040  020040  020040
          014054  020040  020060  020040
          014062  030440  020040  020040
```

```
        014070  020062  020040  031440
        014076  020040  020040  020064
        014104  020040  032440  020040
        014112  020040  020066  020040
        014120  033440  047045     000
 8746   014125     045  031123  047445  FORM20: .ASCIZ  /%S2%03%S2%03%S2%03%S2%03%N/
        014132  022463  031123  047445
        014140  022463  031123  047445
        014146  022463  031123  047445
        014154  022463  000116
 8747   014160  047045     000          FORM21: .ASCIZ  /%N/
 8748   014163     045  022516  020101  FORM22: .ASCIZ  /%N%A SRC%S13/
        014170  051123  022503  030523
        014176  000063
 8749   014200  047045  040445  051440  FORM23: .ASCIZ  /%N%A SRC1%S12/
        014206  041522  022461  030523
        014214  000062
 8750   014216  047045  040445  051440  FORM24: .ASCIZ  /%N%A SRC2%S12/
        014224  041522  022462  030523
        014232  000062
 8751   014234  047045  040445  042440  FORM25: .ASCIZ  /%N%A EXP RESULT%S4/
        014242  050130  051040  051505
        014250  046125  022524  032123
        014256     000
 8752   014257     045  022516  020101  FORM26: .ASCIZ  /%N%A ACT RESULT%S4/
        014264  041501  020124  042522
        014272  052523  052114  051445
        014300  000064
 8753   014302  040445  000040          FORM27: .ASCIZ  /%A /
 8754   014306  051445  022462  044501  FORM30: .ASCIZ  /%S2%AINST CNT:%D2%S1%D5/
        014314  051516  020124  047103
        014322  035124  042045  022462
        014330  030523  042045  000065
 8755   014336  040445  000111          FORM31: .ASCIZ  /%AI/
 8756   014342  040445  020040  044523  FORM32: .ASCIZ  /%A  SIGN BYTE=(/
        014350  047107  041040  052131
        014356  036505  000050
 8757   014362  040445  000051          FORM33: .ASCIZ  /%A)/
 8758   014366  040445  025440     000  FORM34: .ASCIZ  /%A +/
 8759   014373     045  020101  000055  FORM35: .ASCIZ  /%A -/
 8760   014400  047045  047045  040445  FORM36: .ASCIZ  /%N%N%ARANDOM # GENERATOR SEED%S5%06%S2%06%S2%06%N/
        014406  040522  042116  046517
        014414  021440  043440  047105
        014422  051105  052101  051117
        014430  051440  042505  022504
        014436  032523  047445  022466
        014444  031123  047445  022466
        014452  031123  047445  022466
        014460  000116
 8761   014462  047045  040445  051105  FORM37: .ASCIZ  /%N%AERROR #%D6/
        014470  047522  020122  022443
        014476  033104     000
 8762   014501     045  022516  042501  FORM38: .ASCIZ  /%N%AERROR IN UNUSED REGISTER SET: USED SET:%O1/
        014506  051122  051117  044440
```

```
                014514  020116  047125  051525
                014522  042105  051040  043505
                014530  051511  042524  020122
                014536  042523  035124  052440
                014544  042523  020104  042523
                014552  035124  047445  000061
 8763           014560  047045  040445  054105  FORM39: .ASCIZ  /%N%AEXP:%06%A  ACT R0-R5 %06%S1%06%S1%06%S1%06%S1%06%S1%06/
                014566  035120  047445  022466
                014574  020101  040440  052103
                014602  051040  026460  032522
                014610  022440  033117  051445
                014616  022461  033117  051445
                014624  022461  033117  051445
                014632  022461  033117  051445
                014640  022461  033117  051445
                014646  022461  033117     000
 8764           014653     045  020101  047111  FORM40: .ASCIZ  /%A INTR CNT:%D4%A REG SET:%01%A MODE:/
                014660  051124  041440  052116
                014666  022472  032104  040445
                014674  051040  043505  051440
                014702  052105  022472  030517
                014710  040445  046440  042117
                014716  035105     000
 8765           014721     045  020101  042040  FRM40A: .ASCIZ  /%A  D-EN:/
                014726  042455  035116     000
 8766           014733     045  031123  022463  FORM41: .ASCIZ  /%S23%AR0%S5%AR1%S5%AR2%S5%AR3%S5%AR4%S5%AR5%S5%AR6%S5%ANZVC%N/
                014740  051101  022460  032523
                014746  040445  030522  051445
                014754  022465  051101  022462
                014762  032523  040445  031522
                014770  051445  022465  051101
                014776  022464  032523  040445
                015004  032522  051445  022465
                015012  051101  022466  032523
                015020  040445  055116  041526
                015026  047045     000
 8767           015031     045  022516  041501  FORM42: .ASCIZ  /%N%ACIS INSTRUCTION WAS SUSPENDED TO SERVICE INTERRUPT/
                015036  051511  044440  051516
                015044  051124  041525  044524
                015052  047117  053440  051501
                015060  051440  051525  042520
                015066  042116  042105  052040
                015074  020117  042523  053122
                015102  041511  020105  047111
                015110  042524  051122  050125
                015116  000124
 8768           015120  047045  040445  051520  FORM43: .ASCIZ  /%N%APSW BIT 8 SHOULD HAVE BEEN SET BUT WAS NOT%N/
                015126  020127  044502  020124
                015134  020070  044123  052517
                015142  042114  044040  053101
                015150  020105  042502  047105
                015156  051440  052105  041040
                015164  052125  053440  051501
                015172  047040  052117  047045
```

```
                015200    000
 8769           015201    045  022516  041101  FORM44: .ASCIZ  /%N%ABIT 8 OF PSW SET WITH PC < CIS INST PC/
                015206 052111  034040  047440
                015214 020106  051520  020127
                015222 042523  020124  044527
                015230 044124  050040  020103
                015236 020074  044503  020123
                015244 047111  052123  050040
                015252 000103
 8770           015254 047045  040445  052523  FORM45: .ASCIZ  /%N%ASUSPECT THAT CIS INST BACKED UP PC TOO FAR/
                015262 050123  041505  020124
                015270 044124  052101  041440
                015276 051511  044440  051516
                015304 020124  040502  045503
                015312 042105  052440  020120
                015320 041520  052040  047517
                015326 043040  051101    000
 8771           015333    045  022516  004501  FORM46: .ASCIZ  /%N%A   WHEN EXITING TO SERVICE INTERRUPT%N/
                015340 044127  047105  042440
                015346 044530  044524  043516
                015354 052040  020117  042523
                015362 053122  041511  020105
                015370 047111  042524  051122
                015376 050125  022524  000116
 8772           015404 047045  040445  044503  FORM47: .ASCIZ  /%N%ACIS INST COMPLETED BUT PSW BIT 8 STILL SET%N/
                015412 020123  047111  052123
                015420 041440  046517  046120
                015426 052105  042105  041040
                015434 052125  050040  053523
                015442 041040  052111  034040
                015450 051440  044524  046114
                015456 051440  052105  047045
                015464    000
 8773           015465    045  022516  044501  FORM48: .ASCIZ  /%N%AIN-LINE CIS INSTRUCTION COMPLETED WITH PC/
                015472 026516  044514  042516
                015500 041440  051511  044440
                015506 051516  051124  041525
                015514 044524  047117  041440
                015522 046517  046120  052105
                015530 042105  053440  052111
                015536 020110  041520    000
 8774           015543    045  022516  020101  FORM49: .ASCIZ  /%N%A   POINTING AT IN-LINE OPERANDS RATHER THAN NEXT INST%N/
                015550 050011  044517  052116
                015556 047111  020107  052101
                015564 044440  026516  044514
                015572 042516  047440  042520
                015600 040522  042116  020123
                015606 040522  044124  051105
                015614 052040  040510  020116
                015622 042516  052130  044440
                015630 051516  022524  000116
 8775           015636 006477  051012  042505  QUES:   .ASCIZ  /?/<CR><LF>/REENTER:/
                015644 052116  051105  000072
 8776           015652 005015    000           XCRLF:  .ASCIZ  <CR><LF>
```

```
 8777  015655     057  005015     000  SLCRLF: .ASCIZ  <SL><CR><LF>
 8779  015661     015  042412  042116  ENDP:   .ASCIZ  <CR><LF>/END OF PASS (EXECUTION OF TABLED TEST CASES COMPLETE)/
       015666  047440  020106  040520
       015674  051523  024040  054105
       015702  041505  052125  047511
       015710  020116  043117  052040
       015716  041101  042514  020104
       015724  042524  052123  041440
       015732  051501  051505  041440
       015740  046517  046120  052105
       015746  024505     000
 8784  015751     015  042412  042116  ENDQP:  .ASCIZ  <CR><LF>/END OF QUICK VERIFY PASS/
       015756  047440  020106  052521
       015764  041511  020113  042526
       015772  044522  054506  050040
       016000  051501  000123
 8785  016004  005015  047111  052123  FSHDR:  .ASCIZ  <CR><LF>/INST UNDER TEST WILL BE DISPLAYED AT THE START OF TESTING FOR E
       016012  052440  042116  051105
       016020  052040  051505  020124
       016026  044527  046114  041040
       016034  020105  044504  050123
       016042  040514  042531  020104
       016050  052101  052040  042510
       016056  051440  040524  052122
       016064  047440  020106  042524
       016072  052123  047111  020107
       016100  047506  020122  040505
       016106  044103  044440  051516
       016114  000124
 8786  016116  005015  052521  041511  QVHDR:  .ASCIZ  <CR><LF>/QUICK VERIFY PASS TIME:  LESS THAN 5 MINUTES/
       016124  020113  042526  044522
       016132  054506  050040  051501
       016140  020123  044524  042515
       016146  020072  046040  051505
       016154  020123  044124  047101
       016162  032440  046440  047111
       016170  052125  051505     000
 8787  016175     045  022516  042501  ACCSEED:.ASCIZ  /%N%AENTER 3 RANDOM NUMBER GEN. SEED CONSTANTS:  %N/
       016202  052116  051105  031440
       016210  051040  047101  047504
       016216  020115  052516  041115
       016224  051105  043440  047105
       016232  020056  042523  042105
       016240  041440  047117  052123
       016246  047101  051524  020072
       016254  022440  000116
 8789  016260  005015  040520  051523  FSHDR1: .ASCIZ  <CR><LF>+PASS TIME: APPROX 30 MIN+
       016266  052040  046511  035105
       016274  040440  050120  047522
       016302  020130  030063  046440
       016310  047111     000
 8794  016313     015  042412  052116  FSHDR2: .ASCIZ  <CR><LF>/ENTERING RANDOM TEST MODE/
       016320  051105  047111  020107
       016326  040522  042116  046517
```

```
        016334  052040  051505  020124
        016342  047515  042504     000
 8795   016347     015  047012  020117  FSHDR3: .ASCIZ  <CR><LF>/NO FURTHER END OF PASS MESSAGES WILL BE ISSUED/
        016354  052506  052122  042510
        016362  020122  047105  020104
        016370  043117  050040  051501
        016376  020123  042515  051523
        016404  043501  051505  053440
        016412  046111  020114  042502
        016420  044440  051523  042525
        016426  000104
 8796   016430  005015  040522  042116  FSHDR4: .ASCIZ  <CR><LF>/RANDOM # GENERATOR SEED CONSTANTS WILL BE PRINTED/
        016436  046517  021440  043440
        016444  047105  051105  052101
        016452  051117  051440  042505
        016460  020104  047503  051516
        016466  040524  052116  020123
        016474  044527  046114  041040
        016502  020105  051120  047111
        016510  042524  000104
 8797   016514  005015  020040  020040  FSHDR5: .ASCIZ  <CR><LF>/    EVERY 1024 CIS INSTRUCTION TESTS/
        016522  053105  051105  020131
        016530  030061  032062  041440
        016536  051511  044440  051516
        016544  051124  041525  044524
        016552  047117  052040  051505
        016560  051524     000
 8801   016563   . 045  026501  026455  DASH:   .ASCIZ  /%A----------%N/
        016570  026455  026455  026455
        016576  026455  026455  026455
        016604  026455  026455  026455
        016612  026455  026455  026455
        016620  026455  026455  026455
        016626  026455  026455  026455
        016634  026455  026455  026455
        016642  026455  026455  026455
        016650  026455  026455  026455
        016656  026455  047045     000
 8802   016663     045  022516  026501  SDASH:  .ASCIZ  /%N%A----------/
        016670  026455  026455  026455
        016676  026455  026455  026455
        016704     000
 8804   016705     015  041412  045532  PNAME:  .ASCIZ  <CR><LF>/CZKEECO PDP-11 CIS INSTRUCTION EXERCISER /
        016712  042505  030103  050040
        016720  050104  030455  020061
        016726  044503  020123  047111
        016734  052123  052522  052103
        016742  047511  020116  054105
        016750  051105  044503  042523
        016756  020122     000
 8809   016761     015  046412  046505  MPT34:  .ASCIZ  <CR><LF>+MEM MGMT HARDWARE AVAILABLE ON SYSTEM UNDER TEST+
        016766  046440  046507  020124
        016774  040510  042122  040527
        017002  042522  040440  040526
```

```
                017010  046111  041101  042514
                017016  047440  020116  054523
                017024  052123  046505  052440
                017032  042116  051105  052040
                017040  051505  000124
 8810           017044  005015  030461  032057  MPT44:  .ASCIZ  <CR><LF>+11/44 PROCESSOR+
                017052  020064  051120  041517
                017060  051505  047523  000122
 8811           017066  005015  030461  033457  MPT74:  .ASCIZ  <CR><LF>+11/74 TYPE PROCESSOR+
                017074  020064  054524  042520
                017102  050040  047522  042503
                017110  051523  051117     000
 8812           017115     015  030412  027461  MPT2324:.ASCIZ  <CR><LF>+11/23 OR 11/24 PROCESSOR+
                017122  031462  047440  020122
                017130  030461  031057  020064
                017136  051120  041517  051505
                017144  047523  000122
 8813           017150  005015  047516  046440  NMM:    .ASCIZ  <CR><LF>+NO MEMORY MGMT HARDWARE ON SYSTEM UNDER TEST+
                017156  046505  051117  020131
                017164  043515  052115  044040
                017172  051101  053504  051101
                017200  020105  047117  051440
                017206  051531  042524  020115
                017214  047125  042504  020122
                017222  042524  052123     000
 8814
 8815
```

```
8817                            .SBTTL  GLOBAL SUBROUTINES SECTION
8818
8819                            .SBTTL          CIS EMULATOR
8820                            ; FUNCTIONAL DESCRIPTION:
8821                            ;    CIS EMULATOR       CONTAINS ROUTINES TO EMULATE EACH OF THE
8822                            ;                       CIS INSTRUCTIONS USING STANDARD PDP-11 INSTRUCTIONS
8823
8824                            ; INPUTS:       CIS INSTRUCTION TO EMULATE
8825                            ;               CIS INSTRUCTION OPERANDS (LENGTHS,ADDRESSES,ETC)
8826                            ;               STARTING ADDRESS FOR REGISTER RESULTS
8827                            ;               ADDRESS FOR CONDITION CODE RESULTS
8828
8829                            ; IMPLICIT INPUTS:      CHARACTER OR DECIMAL STRINGS SETUP IN EMULATION BUFFER
8830
8831                            ; OUTPUTS:      CONDITION CODES
8832                            ;               GENERAL PURPOSE REGISTERS
8833                            ;       .       STRINGS IN EMULATION BUFFER
8834
8835                            ; IMPLICIT OUTPUTS:
8836
8837                            ; SUBORDINATE ROUTINES USED:
8838
8839                            ; FUNCTIONAL SIDE EFFECTS:
8840
8841                            ; CALLING SEQUENCE:     JSR PC,EMULATE
8842                            ;                       XXXXXX                  ;OCTAL ENCODING OF CIS INST
8843                            ;                       YYYYYY                  ;POINTER TO REGISTER OPERANDS
8844                            ;                       ZZZZZZ                  ;POINTER TO REGISTER RESULTS
8845                            ;                       WWWWWW                  ;POINTER TO CONDITION CODE RESULTS
8846
8847  177776                                    EPSW = 177776
8848  017230                            .EVEN
```

```
 8850
 8851  017230  010037  017422  EMULAT:         .SBTTL  INSTRUCTION DECODER
                               MOV R0,ESTORE   ;SAVE OLD REGISTER VALUES
 8852  017234  010137  017424  MOV R1,ESTORE+2
 8853  017240  010237  017426  MOV R2,ESTORE+4
 8854  017244  010337  017430  MOV R3,ESTORE+6
 8855  017250  010437  017432  MOV R4,ESTORE+10
 8856  017254  010537  017434  MOV R5,ESTORE+12
 8857  017260  005037  036316  CLR EZDF        ;CLEAR ZERO DIVIDE FLAG
 8858  017264  011600          MOV (SP),R0     ;GRAB DATA POINTERS
 8859  017266  012037  017440  MOV (R0)+,EINST ;CIS INSTRUCTION BEING CALLED
 8860  017272  012037  017442  MOV (R0)+,EIRSTK ;FAKE INPUT GPRS
 8861  017276  012037  017444  MOV (R0)+,EORSTK ;FAKE OUTPUT GPRS
 8862  017302  012037  017446  MOV (R0)+,EOPSW ;FAKE PSW
 8863  017306  010016          MOV R0,(SP)     ;SUB RETURN ADDRESS
 8864  017310  012700  017470  MOV #ELISTA,R0  ;CIS COMMAND LIST POINTER
 8865  017314  005710          1$:  TST (R0)   ;EXIT IF INSTRUCTION CANT DECODE
 8866  017316  001001          BNE 2$          ;ELSE CONTINUE SEARCH
 8867  017320  000207          RTS PC
 8868  017322  023720  017440  2$:  CMP EINST,(R0)+ ;LOOK AT TABLE FOR MATCH
 8869  017326  001372          BNE 1$          ;KEEP TRYING
 8870  017330  162700  017472  SUB #ELISTA+2,R0 ;AT LAST, SO FIND HANDLER FOR IT
 8871  017334  062700  017614  ADD #ELISTB,R0  ;HANDLER ADDRESS IN TABLE B
 8872  017340  011037  017436  MOV (R0),EROUT  ;HOLD ADDRESS WHILE I FIND THE DATA
 8873  017344  012700  017450  MOV #E0,R0      ;POINTER TO EMULATE GPRS
 8874  017350  013701  017442  MOV EIRSTK,R1   ;POINTER TO REGISTER DATA
 8875  017354  012120          3$:  MOV (R1)+,(R0)+ ;BEAM OVER THE DATA
 8876  017356  022700  017466  CMP #E6+2,R0    ;EXIT LOOP AFTER R6 LOADED
 8877  017362  001374          BNE 3$          ;ELSE LOAD NEXT
 8878  017364  004777  000046  JSR PC,@EROUT   ;EXECUTE EMULATED CIS INSTRUCTION
 8879  017370  013700  017422  MOV ESTORE,R0   ;ON RETURN RESTORE REGISTERS
 8880  017374  013701  017424  MOV ESTORE+2,R1
 8881  017400  013702  017426  MOV ESTORE+4,R2
 8882  017404  013703  017430  MOV ESTORE+6,R3
 8883  017410  013704  017432  MOV ESTORE+10,R4
 8884  017414  013705  017434  MOV ESTORE+12,R5
 8885  017420  000207          RTS PC          ;RETURN TO MAIN PROGRAM
```

```
 8887                                           .SBTTL                  DATA STORAGE
 8888  017422  000006                ESTORE:     .BLKW 6
 8889  017436  000000                EROUT:      .WORD 0
 8890  017440  000000                EINST:      .WORD 0
 8891  017442  000000                EIRSTK:     .WORD 0
 8892  017444  000000                EORSTK:     .WORD 0
 8893  017446  000000                EOPSW:      .WORD 0
 8894  017450  000000                E0:         .WORD 0
 8895  017452  000000                E1:         .WORD 0
 8896  017454  000000                E2:         .WORD 0
 8897  017456  000000                E3:         .WORD 0
 8898  017460  000000                E4:         .WORD 0
 8899  017462  000000                E5:         .WORD 0
 8900  017464  000000                E6:         .WORD 0
 8901  017466  000000                TEMP:       .WORD 0
 8902  017470  076020                ELISTA:     .WORD 076020
 8903  017472  076021                            .WORD 076021
 8904  017474  076022                            .WORD 076022
 8905  017476  076023                            .WORD 076023
 8906  017500  076024                            .WORD 076024
 8907  017502  076025                            .WORD 076025
 8908  017504  076026                            .WORD 076026
 8909  017506  076027                            .WORD 076027
 8910  017510  076030                            .WORD 76030
 8911  017512  076031                            .WORD 76031
 8912  017514  076032                            .WORD 76032
 8913  017516  076040                            .WORD 76040
 8914  017520  076041                            .WORD 76041
 8915  017522  076042                            .WORD 76042
 8916  017524  076043                            .WORD 76043
 8917  017526  076044                            .WORD 76044
 8918  017530  076045                            .WORD 76045
 8919  017532  076050                            .WORD 76050
 8920  017534  076051                            .WORD 76051
 8921  017536  076052                            .WORD 76052
 8922  017540  076053                            .WORD 76053
 8923  017542  076054                            .WORD 76054
 8924  017544  076055                            .WORD 76055
 8925  017546  076056                            .WORD 76056
 8926  017550  076057                            .WORD 76057
 8927  017552  076060                            .WORD 076060
 8928  017554  076061                            .WORD 076061
 8929  017556  076062                            .WORD 076062
 8930  017560  076063                            .WORD 076063
 8931  017562  076064                            .WORD 076064
 8932  017564  076065                            .WORD 076065
 8933  017566  076066                            .WORD 076066
 8934  017570  076067                            .WORD 076067
 8935  017572  076070                            .WORD 76070
 8936  017574  076071                            .WORD 76071
 8937  017576  076072                            .WORD 76072
 8938  017600  076073                            .WORD 76073
 8939  017602  076074                            .WORD 76074
 8940  017604  076075                            .WORD 76075
```

```
8941  017606  076076                          .WORD 76076
8942  017610  076077                          .WORD 76077
8943  017612  000000                          .WORD 0
8944  017614  036324              ELISTB:     .WORD EL2D0
8945  017616  036430                          .WORD EL2D1
8946  017620  036436                          .WORD EL2D2
8947  017622  036444                          .WORD EL2D3
8948  017624  036452                          .WORD EL2D4
8949  017626  036466                          .WORD EL2D5
8950  017630  036502                          .WORD EL2D6
8951  017632  036546                          .WORD EL2D7
8952  017634  017736                          .WORD EMOVC
8953  017636  020442                          .WORD EMOVRC
8954  017640  020160                          .WORD EMOVTC
8955  017642  021332                          .WORD ELOCC
8956  017644  021364                          .WORD ESKPC
8957  017646  021254                          .WORD ESCNC
8958  017650  021176                          .WORD ESPNC
8959  017652  020664                          .WORD ECMPC
8960  017654  021066                          .WORD EMTCHC
8961  017656  023520                          .WORD EADDN
8962  017660  023566                          .WORD ESUBN
8963  017662  032422                          .WORD ECMPN
8964  017664  027074                          .WORD ECVTNL
8965  017666  027640                          .WORD ECVTPN
8966  017670  030252                          .WORD ECVTNP
8967  017672  031024                          .WORD EASHN
8968  017674  025276                          .WORD ECVTLN
8969  017676  036606                          .WORD EL3D0
8970  017700  036662                          .WORD EL3D1
8971  017702  036670                          .WORD EL3D2
8972  017704  036676                          .WORD EL3D3
8973  017706  036704                          .WORD EL3D4
8974  017710  036712                          .WORD EL3D5
8975  017712  036720                          .WORD EL3D6
8976  017714  037000                          .WORD EL3D7
8977  017716  023510                          .WORD EADDP
8978  017720  023526                          .WORD ESUBP
8979  017722  032346                          .WORD ECMPP
8980  017724  027102                          .WORD ECVTPL
8981  017726  033206                          .WORD EMULP
8982  017730  035250                          .WORD EDIVP
8983  017732  030750                          .WORD EASHP
8984  017734  025304                          .WORD ECVTLP
```

```
 8986                                                    .SBTTL  MOVE STRING
 8987  017736  013700  017452          EMOVC:           MOV E1,R0       ;FIND END OF SOURCE STRING
 8988  017742  063700  017450                           ADD E0,R0
 8989  017746  013701  017456                           MOV E3,R1       ;FIND END OF DEST. STRING
 8990  017752  063701  017454                           ADD E2,R1
 8991  017756  023737  017450  017454                   CMP E0,E2       ;WICH STRING IS LONGER
 8992  017764  101003                                   BHI 1$          ;SOURCE
 8993  017766  103416                                   BLO 2$          ;DEST.
 8994  017770  010102                                   MOV R1,R2       ;THEIR THE SAME
 8995  017772  000420                                   BR 3$
 8996  017774  013700  017452                    1$:    MOV E1,R0       ;SHORTEN SOURCE STRING
 8997  020000  063700  017454                           ADD E2,R0
 8998  020004  010102                                   MOV R1,R2       ;DEST USED END = REAL END
 8999  020006  013703  017450                           MOV E0,R3       ;CALCULATE # OF CHARS
 9000  020012  163703  017454                           SUB E2,R3       ; NOT TRANSFERRED.
 9001  020016  010377  177422                           MOV R3,@EORSTK  ;SAVE RESULT
 9002  020022  000406                                   BR 4$
 9003  020024  013702  017456                    2$:    MOV E3,R2       ;USED END < REAL END
 9004  020030  063702  017450                           ADD E0,R2
 9005  020034  005077  177404                    3$:    CLR @EORSTK     ;ALL CHAR. TRANSFERED TO DEST.
 9006  020040  023737  017452  017456            4$:    CMP E1,E3       ;WICH STRING IS IN HIGH CORE
 9007  020046  103410                                   BLO EFORWD      ;DEST STRING IS
 9008  020050  013703  017452          EBACK:           MOV E1,R3       ;START ADDRESS OF SOURCE
 9009  020054  013704  017456                           MOV E3,R4       ;START ADDRESS OF DEST.
 9010  020060  020402                             1$:   CMP R4,R2       ;IS TRANSFER COMPLETE ?
 9011  020062  001410                                   BEQ EFILL       ;YES
 9012  020064  112324                                   MOVB (R3)+,(R4)+ ;XFER CHAR.
 9013  020066  000774                                   BR 1$
 9014  020070  010203          EFORWD:                  MOV R2,R3       ;DEST STRING POINTER
 9015  020072  023700  017452                    1$:   CMP E1,R0       ;IS XFER COMPLETE ?
 9016  020076  001402                                   BEQ EFILL       ;YES
 9017  020100  114043                                   MOVB -(R0),-(R3) ;XFER CHAR.
 9018  020102  000773                                   BR 1$
 9019  020104  020102          EFILL:                   CMP R1,R2       ;ADD FILL CHARS. TO COMPLETE STRING
 9020  020106  001403                                   BEQ 2$
 9021  020110  113722  017460                          MOVB E4,(R2)+   ;XFER FILL
 9022  020114  000773                                   BR EFILL
 9023  020116  013700  017444                    2$:   MOV EORSTK,R0   ;RETURN CLEAN UP
 9024  020122  005720                                   TST (R0)+       ;R0 = R0
 9025  020124  005020                                   CLR (R0)+       ;R1 = 0
 9026  020126  005020                                   CLR (R0)+       ;R2 = 0
 9027  020130  005020                                   CLR (R0)+       ;R3 = 0
 9028  020132  013720  017460                          MOV E4,(R0)+    ;R4 = R4
 9029  020136  013710  017462                          MOV E5,(R0)     ;R5 = R5
 9030  020142  023737  017450  017454                   CMP E0,E2       ;SET PSW CC BITS
 9031  020150  013777  177776  177270                   MOV EPSW,@EOPSW ;STORE RESULT
 9032  020156  000207                                   RTS PC
```

```
 9034                                          .SBTTL  MOVE STRING TRANSLATE
 9035  020160  013700  017452          EMOVTC: MOV E1,R0       ;FIND END OF SOURCE
 9036  020164  063700  017450                  ADD E0,R0
 9037  020170  013701  017456                  MOV E3,R1       ;FIND END OF DEST.
 9038  020174  063701  017454                  ADD E2,R1
 9039  020200  023737  017450  017454          CMP E0,E2       ;WHICH STRING IS LONGER
 9040  020206  101003                          BHI 1$          ;SOURCE
 9041  020210  103416                          BLO 2$          ;DEST.
 9042  020212  010102                          MOV R1,R2       ;SAME
 9043  020214  000420                          BR 3$
 9044  020216  013700  017452            1$:   MOV E1,R0       ;SHORTEN SOURCE STRING
 9045  020222  063700  017454                  ADD E2,R0
 9046  020226  010102                          MOV R1,R2
 9047  020230  013703  017450                  MOV E0,R3       ;CALCULATE NO. OF CHARS.
 9048  020234  163703  017454                  SUB E2,R3       ;  NOT TRANSFERRED
 9049  020240  010377  177200                  MOV R3,@EORSTK  ;STORE RESULT
 9050  020244  000406                          BR 4$
 9051  020246  013702  017456            2$:   MOV E3,R2       ;MARK REAL END OF DEST
 9052  020252  063702  017450                  ADD E0,R2
 9053  020256  005077  177162            3$:   CLR @EORSTK
 9054  020262  023737  017452  017456    4$:   CMP E1,E3       ;WHO'S HIGHER IN MEMORY
 9055  020270  103420                          BLO EMTFRD      ;MOVE FORWARD
 9056  020272  013703  017452          EMTBCK: MOV E1,R3       ;START OF SOURCE
 9057  020276  013704  017456                  MOV E3,R4       ;START OF DEST.
 9058  020302  020402                    1$:   CMP R4,R2       ;XFER COMPLETE YET
 9059  020304  001430                          BEQ EMTFIL      ;YES
 9060  020306  112337  017466                  MOVB (R3)+,TEMP ;CAL. INDEX INTO TABLE
 9061  020312  105037  017467                  CLRB TEMP+1
 9062  020316  063737  017462  017466          ADD E5,TEMP
 9063  020324  117724  177136                  MOVB @TEMP,(R4)+ ;MOVE TABLE VALUE TO DEST.
 9064  020330  000764                          BR 1$
 9065  020332  010203          EMTFRD: MOV R2,R3       ;DEST MOVE POINTER
 9066  020334  023700  017452            1$:   CMP E1,R0       ;XFER COMPLETE ?
 9067  020340  001412                          BEQ EMTFIL
 9068  020342  114037  017466                  MOVB -(R0),TEMP ;CAL INDEX INTO TABLE
 9069  020346  105037  017467                  CLRB TEMP+1
 9070  020352  063737  017462  017466          ADD E5,TEMP
 9071  020360  117743  177102                  MOVB @TEMP,-(R3) ;MOVE TABLE VALUE INTO DEST.
 9072  020364  000763                          BR 1$
 9073  020366  020102          EMTFIL: CMP R1,R2       ;COMPLETE
 9074  020370  001403                          BEQ 2$          ;YES
 9075  020372  113722  017460                  MOVB E4,(R2)+   ;XFER FILL
 9076  020376  000773                          BR EMTFIL
 9077  020400  013700  017444            2$:   MOV EORSTK,R0   ;RETURN CLEAN UP
 9078  020404  005720                          TST (R0)+       ;R0 = R0
 9079  020406  005020                          CLR (R0)+       ;R1 = 0
 9080  020410  005020                          CLR (R0)+       ;R2 = 0
 9081  020412  005020                          CLR (R0)+       ;R3 = 0
 9082  020414  013720  017460                  MOV E4,(R0)+    ;R4 = R4
 9083  020420  013710  017462                  MOV E5,(R0)     ;R5 = R5
 9084  020424  023737  017450  017454          CMP E0,E2       ;SET CC BITS
 9085  020432  013777  177776  177006          MOV EPSW,@EOPSW ;RETURN STATUS
 9086  020440  000207                          RTS PC
```

```
 9089                                                    .SBTTL  MOVE REVERSE STRING
 9090  020442  013700  017452          EMOVRC:         MOV E1,R0       ;FIND END OF SOURCE
 9091  020446  063700  017450                          ADD E0,R0
 9092  020452  013701  017456                          MOV E3,R1       ;FIND END OF DEST.
 9093  020456  063701  017454                          ADD E2,R1
 9094  020462  023737  017450  017454                  CMP E0,E2       ;WHICH STRING IS LARGER
 9095  020470  101004                                  BHI 1$          ;SOURCE
 9096  020472  103421                                  BLO 2$          ;DEST.
 9097  020474  013702  017456                          MOV E3,R2       ;SAME
 9098  020500  000421                                  BR 3$
 9099  020502  010037  017452                  1$:     MOV R0,E1       ;SHORTEN SOURCE
 9100  020506  163737  017454  017452                  SUB E2,E1
 9101  020514  013702  017456                          MOV E3,R2       ;DEST. REAL START
 9102  020520  013703  017450                          MOV E0,R3       ;CALCULATE NO OF CHARS
 9103  020524  163703  017454                          SUB E2,R3       ;  NOT TRANSFERRED
 9104  020530  010377  176710                          MOV R3,@EORSTK  ;STORE RESULT
 9105  020534  000405                                  BR 4$
 9106  020536  010102                          2$:     MOV R1,R2       ;MARK REAL START OF DEST.
 9107  020540  163702  017450                          SUB E0,R2
 9108  020544  005077  176674                  3$:     CLR @EORSTK     ;ALL CHARS. TRANSFERED
 9109  020550  023702  017452                  4$:     CMP E1,R2       ;WHO'S IN HIGH MEMORY
 9110  020554  103407                                  BLO EMRFWD      ;MOVE FORWARD
 9111  020556  013703  017452          EMRBKD:         MOV E1,R3       ;SOURCE START POINTER
 9112  020562  010204                                  MOV R2,R4       ;DEST. START POINTER
 9113  020564  020401                          1$:     CMP R4,R1       ;XFER COMPLETE
 9114  020566  001406                                  BEQ EMRFIL      ;YES
 9115  020570  112324                                  MOVB (R3)+,(R4)+ ;XFER CHAR.
 9116  020572  000774                                  BR 1$
 9117  020574  020102          EMRFWD:         CMP R1,R2       ;XFER COMPLETE
 9118  020576  001402                                  BEQ EMRFIL      ;YES
 9119  020600  114041                                  MOVB -(R0),-(R1)        ;XFER CHAR.
 9120  020602  000774                                  BR EMRFWD
 9121  020604  013703  017456          EMRFIL:         MOV E3,R3       ;ADD FILLER
 9122  020610  020302                          2$:     CMP R3,R2       ;FILL COMPLETE
 9123  020612  001403                                  BEQ 1$          ;YES
 9124  020614  113723  017460                          MOVB E4,(R3)+   ;XFER FILL
 9125  020620  000773                                  BR 2$
 9126  020622  013700  017444                  1$:     MOV EORSTK,R0   ;RETURN CLEAN UP
 9127  020626  005720                                  TST (R0)+       ;R0 = R0
 9128  020630  005020                                  CLR (R0)+       ;R1 = 0
 9129  020632  005020                                  CLR (R0)+       ;R2 = 0
 9130  020634  005020                                  CLR (R0)+       ;R3 = 0
 9131  020636  013720  017460                          MOV E4,(R0)+    ;R4 = R4
 9132  020642  013710  017462                          MOV E5,(R0)     ;R5 = R5
 9133  020646  023737  017450  017454                  CMP E0,E2       ;SET CC BITS
 9134  020654  013777  177776  176564                  MOV EPSW,@EOPSW ;RETURN TO USER
 9135  020662  000207                                  RTS PC
```

```
 9137                                                .SBTTL  COMPARE STRING
 9138  020664  013700  017450          ECMPC:       MOV E0,R0               ;CAL. END OF SCR1
 9139  020670  063700  017452                       ADD E1,R0
 9140  020674  013701  017454                       MOV E2,R1               ;CAL. END OF SCR2
 9141  020700  063701  017456                       ADD E3,R1
 9142  020704  013702  017452                       MOV E1,R2               ;START OF SCR1
 9143  020710  013703  017456                       MOV E3,R3               ;START OF SCR2
 9144  020714  020002                        1$:    CMP R0,R2               ;END OF SCR1
 9145  020716  001427                               BEQ ENDA                ;YES
 9146  020720  020103                               CMP R1,R3               ;END OF SCR2
 9147  020722  001445                               BEQ ENDB                ;YES
 9148  020724  121213                               CMPB (R2),(R3)          ;SET CC BITS
 9149  020726  013777  177776  176512               MOV EPSW,@EOPSW         ;STORE STATUS
 9150  020734  122322                               CMPB (R3)+,(R2)+                ;FIND NON MATCHING CHARS.
 9151  020736  001766                               BEQ 1$                  ;KEEP TRYING
 9152  020740  005303                               DEC R3                  ;ADJ SCR1 POINTER
 9153  020742  005302                               DEC R2                  ;ADJ SCR2 POINTER
 9154  020744  160301          ECMOUT:              SUB R3,R1               ;NO. OF CHARS. LEFT IN SCR2
 9155  020746  160200                               SUB R2,R0               ;NO. OF CHARS. LEFT IN SCR1
 9156  020750  013704  017444  EMATOT:              MOV EORSTK,R4           ;REGISTER DUMP POINTER
 9157  020754  010024                               MOV R0,(R4)+            ;R0 = SCR1 LEN
 9158  020756  010224                               MOV R2,(R4)+            ;R1 = SCR1 START
 9159  020760  010124                               MOV R1,(R4)+            ;R2 = SCR2 LEN
 9160  020762  010324                               MOV R3,(R4)+            ;R3 = SCR2 START
 9161  020764  013724  017460                       MOV E4,(R4)+            ;R4 = R4
 9162  020770  013724  017462                       MOV E5,(R4)+            ;R5 = R5
 9163  020774  000207                               RTS PC
 9164  020776  020103          ENDA:                CMP R1,R3               ;END SCR2 ?
 9165  021000  001004                               BNE 1$
 9166  021002  013777  177776  176436               MOV EPSW,@EOPSW         ;YES - STORE STATUS
 9167  021010  000755                               BR ECMOUT
 9168  021012  123713  017460          1$:          CMPB E4,(R3)            ;SET CC BITS
 9169  021016  013777  177776  176422               MOV EPSW,@EOPSW         ;STORE RESULT
 9170  021024  123723  017460                       CMPB E4,(R3)+           ;FIND NON MATCHING CHARS.
 9171  021030  001762                               BEQ ENDA                ;KEEP TRYING
 9172  021032  005303                               DEC R3                  ;ADJ SCR2 POINTER
 9173  021034  000743                               BR ECMOUT
 9174  021036  020002          ENDB:                CMP R0,R2               ;END SCR1
 9175  021040  001741                               BEQ ECMOUT              ;YES
 9176  021042  121237  017460                       CMPB (R2),E4            ;SET CC BITS
 9177  021046  013777  177776  176372               MOV EPSW,@EOPSW         ;SAVE RESULT
 9178  021054  123722  017460                       CMPB E4,(R2)+           ;FIND NON MATCHING CHARS.
 9179  021060  001766                               BEQ ENDB                ;KEEP TRYING
 9180  021062  005302                               DEC R2                  ;ADJ POINTER
 9181  021064  000727                               BR ECMOUT
```

```
 9183                                                    .SBTTL  MATCH STRING
 9184  021066  013700  017450          EMTCHC:         MOV E0,R0       ;CALCULATE END OF SRC
 9185  021072  063700  017452                          ADD E1,R0
 9186  021076  013701  017454                          MOV E2,R1       ;CALCULATE END OF OBJ
 9187  021102  063701  017456                          ADD E3,R1
 9188  021106  013702  017452                          MOV E1,R2       ;START OF SRC
 9189  021112  013703  017456                          MOV E3,R3       ;START OF OBJ
 9190  021116  010204                          4$:     MOV R2,R4       ;SAVE START OF SRC
 9191  021120  020103                          1$:     CMP R1,R3       ;OBJ FOUND IN STRING?
 9192  021122  001411                                  BEQ 3$          ;YES
 9193  021124  020200                                  CMP R2,R0       ;END OF STRING AND NO MATCH
 9194  021126  001410                                  BEQ 2$          ;YES
 9195  021130  122322                                  CMPB (R3)+,(R2)+ ;DO CHARS. MATCH
 9196  021132  001772                                  BEQ 1$          ;YES
 9197  021134  013703  017456                          MOV E3,R3       ;NO , SO RESET OBJ POINTER
 9198  021140  005204                                  INC R4          ;ADVANCE SRC POINTER TO ONE CHAR
 9199                                                                  ;  POSITION BEYOND WHERE IT WAS
 9200  021142  010402                                  MOV R4,R2
 9201  021144  000764                                  BR 4$
 9202  021146  010402                          3$:     MOV R4,R2
 9203  021150  013703  017456                  2$:     MOV E3,R3       ;RESTORE OBJ.LEN AND OBJ.ADR
 9204  021154  013701  017454                          MOV E2,R1
 9205  021160  160200                                  SUB R2,R0       ;SET CC BITS
 9206  021162  005700                                  TST R0
 9207  021164  013777  177776  176254                  MOV EPSW,@EOPSW ;SAVE RESULT
 9208  021172  000137  020750                          JMP EMATOT
```

```
 9210                                                   .SBTTL  SEARCH FOR NON GROUP CHARS.
 9211  021176  013700  017452          ESPNC:          MOV E1,R0  ;CALCULATE END OF SOURCE
 9212  021202  063700  017450                          ADD E0,R0  ;
 9213  021206  013701  017452                          MOV E1,R1  ;START OF SOURCE
 9214  021212  020100                        1$:       CMP R1,R0  ;COMPLETE
 9215  021214  001476                                  BEQ ESPND  ;YES
 9216  021216  112137  017466                          MOVB (R1)+,TEMP  ;TABLE OFFSET
 9217  021222  105037  017467                          CLRB TEMP+1  ;LOWER BYTE ONLY
 9218  021226  063737  017462  017466                  ADD E5,TEMP  ;TABLE DATA
 9219  021234  117702  176226                          MOVB @TEMP,R2
 9220  021240  133702  017460                          BITB E4,R2  ;AND MASK
 9221  021244  001362                                  BNE 1$  ;IF = 0 END SEARCH
 9222  021246  005301                                  DEC R1  ;ADJ POINTER
 9223  021250  000137  021412                          JMP ESPND
```

```
9225                                                    .SBTTL          SEARCH FOR GROUP CHARS.
9226  021254  013700  017452          ESCNC:          MOV E1,R0       ;CALCULATE END OF SOURCE
9227  021260  063700  017450                          ADD E0,R0
9228  021264  013701  017452                          MOV E1,R1       ;START OF SOURCE
9229  021270  020100                          1$:     CMP R1,R0       ;COMPLETE ?
9230  021272  001447                                  BEQ ESPND       ;YES
9231  021274  112137  017466                          MOVB (R1)+,TEMP ;TABLE OFFSET
9232  021300  105037  017467                          CLRB TEMP+1     ;LOWER BYTE ONLY
9233  021304  063737  017462  017466                  ADD E5,TEMP     ;TABLE DATA
9234  021312  117702  176150                          MOVB @TEMP,R2
9235  021316  133702  017460                          BITB E4,R2      ;AND MASK
9236  021322  001762                                  BEQ 1$          ;IF <>0 END SEARCH
9237  021324  005301                                  DEC R1          ;ADJ POINTER
9238  021326  000137  021412                          JMP ESPND
```

```
9240
9241  021332  013700  017452          ELOCC:      .SBTTL                  LOCC INSTRUCTION
9242  021336  010001                              MOV E1,R0               ;CALCULATE END ADDRESS
9243  021340  063700  017450                      MOV R0,R1               ;SEARCH POINTER
9244  021344  020001                              ADD E0,R0
9245  021346  001421                      1$:     CMP R0,R1               ;HAS SEARCH FAILED
9246  021350  122137  017460                      BEQ ESPND               ;YES
9247  021354  001373                              CMPB (R1)+,E4           ;LOOK FOR CHAR.
9248  021356  005301                              BNE 1$                  ;NOT FOUND YET
9249  021360  000137  021412                      DEC R1                  ;ADJUST POINTER
                                                  JMP ESPND               ;RETURN
```

```
9251
9252  021364  013700  017452          ESKPC:      .SBTTL                  SKPC INSTRUCTION
9253  021370  010001                              MOV E1,R0               ;CALCULATE END ADDRESS
9254  021372  063700  017450                      MOV R0,R1               ;START ADDRESS
9255  021376  020001                              ADD E0,R0
9256  021400  001404                      1$:     CMP R0,R1               ;SEARCH FOR PASS
9257  021402  122137  017460                      BEQ ESPND               ;FOUND IT
9258  021406  001773                              CMPB (R1)+,E4           ;LOOK FOR NOT CHAR.
9259  021410  005301                              BEQ 1$
9260  021412  160100                              DEC R1
9261  021414  013702  017444          ESPND:      SUB R1,R0               ;NO. OF CHARS.
9262  021420  010022                              MOV EORSTK,R2           ;REGISTER DUMP POINTER
9263  021422  010122                              MOV R0,(R2)+            ;R0 = LEN
9264  021424  013722  017454                      MOV R1,(R2)+            ;R1 = POS.
9265  021430  013722  017456                      MOV E2,(R2)+            ;R2 = R2
9266  021434  013722  017460                      MOV E3,(R2)+            ;R3 = R3
9267  021440  013722  017462                      MOV E4,(R2)+            ;R4 = R4
9268  021444  005700                              MOV E5,(R2)+            ;R5 = R5
9269  021446  013777  177776  175772              TST R0                  ;SET CC BITS
9270  021454  000207                              MOV EPSW,@EOPSW         ;STORE RESULTS
                                                  RTS PC
```

```
                                .SBTTL                  DIGIT (SIGN) RETRIEVER
                        ;*************************************************************************
                        ;  ROUTINE TO RETREIVE A PACKED OR ZONED DIGIT (OR SIGN) FROM A DECIMAL STRING.
                        ;
                        ;
                        ;       INPUTS: R0 = STRING ADDRESS
                        ;               R1 = TYPE & POSITION OF DIGIT REQUESTED WITHIN STRING
                        ;               ELSD = TYPE & STRING LENGTH
                        ;               EODD = ODD SIZE INDICATOR
                        ;
                        ;       OUTPUT: ERSNEG = SIGN (IS SIGN WAS REQUESTED)
                        ;                      = 0 IF REQUEST IS FOR UNSIGNED STRING SIGN.
                        ;               R2 = REQUESTED DIGIT (0 IF SIGN WAS REQUESTED)
                        ;               SGNBYT = SIGN BYTE IF SIGN WAS REQUESTED
                        ;               R0,R1,ELSD,EODD RETURNED UNDISTURBED
                        ;
                        ;       USAGE:  (MSD=MOST SIGNIFICANT DIGIT;LSD=LEAST SIGNIF DIGIT)
                        ;               TO REQUEST MSD  SET R1 = 0
                        ;               "    "     LSD  SET R1 = STRING LENGTH -1
                        ;               "    "     SIGN SET R1 = STRING LENGTH
                        ;
                        ;*************************************************************************

021456  005737  026430  ESNK:   TST EPAK                 ;PACKED OR ZONED
021462  100403                  BMI 1$
021464  004737  021702          JSR PC,EFNDTZ           ;ZONED
021470  000402                  BR 2$
021472  004737  021500  1$:     JSR PC,EFINDT           ;PACKED
021476  000207          2$:     RTS PC

                        ;PACKED STRING DIGIT RETRIEVER
021500  010037  032236  EFINDT: MOV R0,ETMPR0           ;SAVE INPUT REGISTERS
021504  010137  032240          MOV R1,ETMPR1
021510  042701  070000          BIC #070000,R1          ;CLEAR TYPE FIELD
021514  005737  025220          TST EODD                ;POSITION CORRECT FOR ODD SIZE NUMBERS
021520  100401                  BMI 10$
021522  005201                  INC R1                  ;NUMBER IS EVEN
021524  010137  025202  10$:    MOV R1,EFINDA           ;FIND WORD TO NIBBLE
021530  006237  025202          ASR EFINDA
021534  042737  000001  025202  BIC #1,EFINDA
021542  060037  025202          ADD R0,EFINDA           ;ADD OFFSET TO POSITION
021546  013700  025202          MOV EFINDA,R0           ;PLACE IN R0 FOR USE
021552  032701  000002          BIT #2,R1               ;WHICH BYTE
021556  001403                  BEQ 1$
021560  116002  000001          MOVB 1(R0),R2           ;GRAB BYTE
021564  000401                  BR 2$
021566  111002  1$:     MOVB (R0),R2            ;GRAB LOWER BYTE
021570  110237  025274  2$:     MOVB R2,SGNBYT          ;SAVE SIGN BYTE FOR POSSIBLE ERROR PRINT
021574  032701  000001          BIT #1,R1               ;WHICH NIBBLE
021600  001433                  BEQ 3$                  ;HIGH
021602  042702  177760  4$:     BIC #177760,R2          ;LOW
021606  123737  025236  032240  CMPB ELSD,ETMPR1        ;REQUEST FOR SIGN?
021614  001020                  BNE 5$                  ;BRANCH IF NO
021616  005037  025170          CLR ERSNEG
```

```
9326  021622  020227  000013                      CMP R2,#13              ;IS RETRIEVED SIGN NEG (1011)?
9327  021626  001403                              BEQ 7$                  ;BRANCH IF YES
9328  021630  020227  000015                      CMP R2,#15              ;IS RETRIEVED SIGN NEG (1101)?
9329  021634  001007                              BNE 6$                  ;BRANCH IF NO
9330  021636  122737  000160  032241      7$:     CMPB #160,ETMPR1+1      ;IS INST UNSIGNED PACKED?
9331  021644  001403                              BEQ 6$                  ;BRANCH IF YES
9332  021646  012737  177777  025170              MOV #177777,ERSNEG      ;SET NEG FLAG
9333  021654  005002                      6$:     CLR R2
9334  021656  013700  032236              5$:     MOV ETMPR0,R0           ;RESTORE REGISTERS
9335  021662  013701  032240                      MOV ETMPR1,R1
9336  021666  000207                              RTS PC                  ;RETURN
9337  021670  006202                      3$:     ASR R2                  ;SELECT UPPER NIBBLE
9338  021672  006202                              ASR R2
9339  021674  006202                              ASR R2
9340  021676  006202                              ASR R2
9341  021700  000740                              BR 4$
9342
9343                                  ;ZONED STRING DIGIT RETRIEVER
9344  021702  010037  032236          EFNDTZ:     MOV R0,ETMPR0           ;SAVE REGISTER
9345  021706  010137  032240                      MOV R1,ETMPR1
9346  021712  013737  025236  025230              MOV ELSD,ESLSD
9347  021720  042701  070000                      BIC #070000,R1
9348  021724  123737  025236  032240              CMPB ELSD,ETMPR1        ;REQUEST FOR SIGN?
9349  021732  001442                              BEQ 1$                  ;BRANCH IF YES
9350  021734  122737  000040  032241      6$:     CMPB #040,ETMPR1+1      ;IS DESC TYPE TRAILING OVERPUNCH?
9351  021742  001405                              BEQ 4$                  ;BRANCH IF YES
9352  021744  122737  000060  032241              CMPB #060,ETMPR1+1      ;IS DESC TYPE LEADING OVERPUNCH?
9353  021752  001411                              BEQ 5$                  ;BRANCH IF YES
9354  021754  000415                              BR 3$
9355
9356  021756  005337  025236          4$:     DEC ELSD                ;TYPE = TRAILING OVERPUNCH
9357  021762  123701  025236                  CMPB ELSD,R1            ;IS DIGIT REQUESTED PART OF THE
9358                                                                  ;   ENCODED SIGN DIGIT?
9359  021766  001010                          BNE 3$                  ;BRANCH IF NO
9360  021770  004737  022322                  JSR PC,DECZO            ;DECODE OVERPUNCH BYTE FOR DIGIT
9361  021774  000407                          BR 2$
9362
9363  021776                          5$:                             ;TYPE = LEADING OVERPUNCH
9364  021776  005701                          TST R1                  ;IS DIGIT REQUESTED PART OF ENCODED
9365                                                                  ;   SIGN DIGIT?
9366  022000  001003                          BNE 3$                  ;BRANCH IF NO
9367  022002  004737  022322                  JSR PC,DECZO            ;DECODE OVERPUNCH BYTE
9368  022006  000402                          BR 2$
9369
9370  022010  060100                  3$:     ADD R1,R0               ;BYTE ADDRESS
9371  022012  111002                          MOVB (R0),R2            ;DATA
9372  022014  042702  177760          2$:     BIC #177760,R2          ;MASK OFF JUNK
9373  022020  013700  032236                  MOV ETMPR0,R0           ;RESTORE REGISTER
9374  022024  013701  032240                  MOV ETMPR1,R1
9375  022030  013737  025230  025236          MOV ESLSD,ELSD
9376  022036  000207                          RTS PC
9377  022040                          1$:
9378  022040  105737  025236                  TSTB ELSD               ;SIGN REQUESTED
9379  022044  001020                          BNE 10$                 ;IS STRING LEN = 0?
                                                                        ;BRANCH IF NO
```

```
 9380  022046  122737  000100  032241                  CMPB #100,ETMPR1+1      ;TYPE = TRAILING SEPARATE?
 9381  022054  001002                                  BNE 103$                ;BRANCH IF NO
 9382  022056  000137  022240                          JMP 14$                 ;RETURN SIGN AT 'A'
 9383  022062  122737  000120  032241          103$:   CMPB #120,ETMPR1+1      ;IS STRING TYPE LEADING SEPARATE?
 9384                                                                          ;NOTE: SEPARATE TYPE ARE THE ONLY
 9385                                                                          ;      0 LEN ZONED STRING THAT
 9386                                                                          ;      THAT OCCUPIES MEMORY.
 9387  022070  001002                                  BNE 102$                ;BRANCH IF NO
 9388  022072  000137  022266                          JMP 15$                 ;RETURN SIGN AT 'A-1'
 9389  022076  005037  025274          102$:   CLR SGNBYT              ;CLEAR SIGN BYTE FOR POSSIBLE ERROR PRINT
 9390  022102  000137  022140                          JMP 100$                ;RETURN + SIGN
 9391
 9392  022106  122737  000000  032241          10$:    CMPB #000,ETMPR1+1      ;IS TYPE = SIGNED ZONED?
 9393  022114  001022                                  BNE 11$                 ;BRANCH IF NO
 9394  022116  060100                                  ADD R1,R0               ;FORM SIGN ADDRESS
 9395  022120  114002                                  MOVB -(R0),R2
 9396  022122  010237  025274                          MOV R2,SGNBYT           ;SAVE SIGN BYTE
 9397  022126  042702  177417                          BIC #177417,R2          ;LOOK ONLY AT SIGN
 9398  022132  020227  000160                          CMP R2,#160             ;IS IT (0111) NEGATIVE
 9399  022136  001404                                  BEQ 101$                ;BRANCH IF YES
 9400  022140  005037  025170          100$:   CLR ERSNEG              ;SET SIGN FLAG TO +
 9401  022144  005002                                  CLR R2
 9402  022146  000722                                  BR 2$
 9403
 9404  022150  012737  177777  025170          101$:   MOV #177777,ERSNEG      ;SET SIGN FLAG TO '-'
 9405  022156  005002                                  CLR R2
 9406  022160  000715                                  BR 2$
 9407  022162  122737  000020  032241          11$:    CMPB #020,ETMPR1+1      ;IS TYPE = UNSIGNED ZONED?
 9408  022170  001004                                  BNE 12$                 ;BRANCH IF NO
 9409  022172  060100                                  ADD R1,R0
 9410  022174  114037  025274                          MOVB -(R0),SGNBYT       ;SAVE SIGN BYTE
 9411  022200  000757                                  BR 100$
 9412  022202  122737  000040  032241          12$:    CMPB #040,ETMPR1+1      ;IS TYPE = TRAILING OVERPUNCH?
 9413  022210  001005                                  BNE 13$                 ;BRANCH IF NO
 9414  022212  005301                                  DEC R1
 9415  022214  004737  022322          120$:   JSR PC,DECZO
 9416  022220  005002                                  CLR R2
 9417  022222  000674                                  BR 2$
 9418
 9419  022224  122737  000060  032241          13$:    CMPB #060,ETMPR1+1      ;IS TYPE = LEADING OVERPUNCH?
 9420  022232  001002                                  BNE 14$                 ;BRANCH IF NO
 9421  022234  005001                                  CLR R1
 9422  022236  000766                                  BR 120$
 9423  022240  122737  000100  032241          14$:    CMPB #100,ETMPR1+1      ;IS TYPE = TRAILING SEPARATE
 9424  022246  001007                                  BNE 15$                 ;BRANCH IF NO
 9425  022250  060100                                  ADD R1,R0               ;FORM ADDRESS OF SIGN
 9426  022252  111037  025274                          MOVB (R0),SGNBYT        ;SAVE SIGN BYTE
 9427  022256  121027  000055                          CMPB (R0),#55           ;IS SIGN = '-'
 9428  022262  001326                                  BNE 100$                ;BRANCH IF NO
 9429  022264  000731                                  BR 101$
 9430  022266  122737  000120  032241          15$:    CMPB #120,ETMPR1+1      ;IS TYPE=LEADING SEPARATE
 9431  022274  001404                                  BEQ 115$
 9432  022276  012737  000001  001114                  MOV #1,$MSGTY           ;TELL APT THERE IS A FATAL ERROR;:REV-C
 9433  022304  000000                                  HALT                    ;ILLEGAL ZONED DATA TYPE
```

```
9434  022306  114037  025274                  115$:   MOVB -(R0),SGNBYT
9435  022312  121027  000055                          CMPB (R0),#55           ;IS SIGN = '-' ?
9436  022316  001310                                  BNE 100$                ;BRANCH IF NO
9437  022320  000713                                  BR 101$
9438
9439
9440                                          ;
9441                                          ;SUBROUTINE TO DECODE ZONED OVERPUNCH SIGN DIGIT BYTE
9442                                          ;
9443  022322  060100                          DECZO:  ADD R1,R0               ;FIND DIGIT BY DECODING
9444                                                                          ;DIGIT RETURNED IN R2; SIGN IN ERSNEG
9445  022324  111002                                  MOVB (R0),R2            ;GET ENCODED BYTE
9446  022326  010237  025274                          MOV R2,SGNBYT           ;SAVE SIGN BYTE FOR POSSIBLE ERROR PRINTOUT
9447  022332  042702  177417                          BIC #177417,R2          ;LOOK AT HIGH NIBBLE
9448  022336  020227  000160                          CMP R2,#160             ;IS HIGH NIBBLE A 7
9449  022342  001014                                  BNE 1$                  ;BRANCH IF NO
9450  022344  111002                                  MOVB (R0),R2            ;DIGIT = 0
9451  022346  032702  000002                  5$:     BIT #2,R2               ;IS SIGN + OR -
9452  022352  001403                                  BEQ 2$                  ;BRANCH IF -
9453  022354  005037  025170                          CLR ERSNEG
9454  022360  000403                                  BR 3$
9455  022362  012737  177777  025170          2$:     MOV #177777,ERSNEG
9456  022370  005002                          3$:     CLR R2
9457  022372  000207                                  RTS PC
9458  022374  020227  000120                  1$:     CMP R2,#120             ;IS HIGH NIBBLE A 5?
9459  022400  001014                                  BNE 4$                  ;BRANCH IF NO
9460  022402  111002                                  MOVB (R0),R2
9461  022404  032702  000010                          BIT #10,R2              ;IS DIGIT = 0?
9462  022410  001356                                  BNE 5$                  ;BRANCH IF YES
9463  022412  012737  177777  025170                  MOV #177777,ERSNEG      ;DIGIT IS NEG
9464  022420  042702  177760                          BIC #177760,R2
9465  022424  062702  000007                          ADD #7,R2
9466  022430  000207                                  RTS PC
9467  022432  020227  000060                  4$:     CMP R2,#060             ;IS HIGH NIBBLE A 3?
9468  022436  001006                                  BNE 6$                  ;BRANCH IF NO
9469  022440  005037  025170                          CLR ERSNEG              ;SIGN IS POSITIVE
9470  022444  111002                                  MOVB (R0),R2
9471  022446  042702  177760                          BIC #177760,R2          ;DIGIT = LOW NIBBLE OF BYTE
9472  022452  000207                                  RTS PC
9473  022454  020227  000100                  6$:     CMP R2,#100             ;IS HIGH NIBBLE A 4?
9474  022460  001407                                  BEQ 61$
9475  022462  005737  002310                          TST PRTSGN              ;DECIMAL PRINTING IN PROGRESS?
9476  022466  001021                                  BNE 62$                 ;BRANCH IF YES (DONT WANT TO HALT IN
9477                                                                          ;  MIDDLE OF ERROR PRINTOUT)
9478  022470  012737  000001  001114                  MOV #1,$MSGTY           ;TELL APT THERE IS A FATAL ERROR;;REV-C
9479  022476  000000                                  HALT                    ;ILLEGAL ENCODING OF OVERPUNCH DIGIT
9480  022500  111002                          61$:    MOVB (R0),R2
9481  022502  042702  177760                          BIC #177760,R2
9482  022506  020227  000012                          CMP R2,#12              ;IS DIGIT POSITIVE?
9483  022512  103407                                  BLO 62$                 ;BRANCH IF YES
9484  022514  012737  177777  025170                  MOV #177777,ERSNEG
9485  022522  042702  000010                          BIC #10,R2
9486  022526  005302                                  DEC R2
9487  022530  000207                                  RTS PC
```

```
 9488  022532  005037  025170                62$:    CLR ERSNEG
 9489  022536  000207                              RTS PC
```

```
                                .SBTTL                  DIGIT (SIGN) PUSHER
                        ;*******************************************************************************
                        ;
                        ;ROUTINE TO PUSH A PACKED OR ZONED DIGIT (OR SIGN) ONTO A DECIMAL STRING
                        ;
                        ;       INPUTS: R0 = STRING ADDRESS
                        ;               R1 = TYPE & POSITION OF WHERE TO STORE DIGIT IN STRING
                        ;               ELSD = TYPE & STRING LEN
                        ;               EODD = ODD SIZE INDICATOR
                        ;               ERSNEG = SIGN IF SIGN IS TO BE STORED
                        ;                        (EXCEPT 1111 IS ALWAYS STORED FOR UNSIGNED PACKED STRINGS)
                        ;               R2 = DIGIT TO PUSH INTO STRING
                        ;
                        ;       OUTPUT: ERSNEG = 0 FOR UNSIGNED STRINGS SIGN
                        ;               R0,R1,ELSD,EODD,R2 RETURNED UNDISTURBED
                        ;
                        ;       USAGE:  TO PUSH MSD  SET R1 = 0
                        ;               "  "    LSD  SET R1 = STRING LEN - 1
                        ;               "  "    SIGN SET R1 = STRING LEN
                        ;               IF STRING LEN = 0 THEN STORED BYTE = 0,SIGN
                        ;
                        ;*******************************************************************************
                        ;
022540  005737  026430  EPUSH:          TST EPAK                ;ZONED OR PACKED STRING?
022544  100403                         BMI 1$
022546  004737  023016                 JSR PC,EPUDTZ           ;ZONED
022552  000402                         BR 2$
022554  004737  022562          1$:    JSR PC,EPUTDT           ;PACKED
022560  000207                   2$:    RTS PC
                        ;
                        ;PACKED STRING NIBBLE PUSHER
022562  010037  032236  EPUTDT:        MOV R0,ETMPR0           ;SAVE REGISTERS
022566  010137  032240                 MOV R1,ETMPR1
022572  042701  070000                 BIC #070000,R1          ;CLEAR TYPE FIELD
022576  010237  032242                 MOV R2,ETMPR2
022602  005737  025220                 TST EODD                ;POSITION CORRECT FOR ODD SIZE NUMBERS
022606  100401                         BMI 10$
022610  005201                         INC R1
022612  010137  025202           10$:  MOV R1,EFINDA           ;FIND WORD TO NIBBLE
022616  006237  025202                 ASR EFINDA
022622  063700  025202                 ADD EFINDA,R0
022626  042702  177760                 BIC #177760,R2          ;MASK JUNK FROM DATA
022632  123737  025236  032240         CMPB ELSD,ETMPR1        ;REQUEST TO INSERT SIGN?
022640  001021                         BNE 5$                  ;BRANCH IF NO
022642  122737  000160  032241         CMPB #160,ETMPR1+1      ;UNSIGNED INST?
022650  001005                         BNE 7$                  ;BRANCH IF NO
022652  112702  000017                 MOVB #17,R2             ;YES - STORE (1111)
022656  005037  025170                 CLR ERSNEG              ;SET SIGN FLAG TO POSITIVE
022662  000410                         BR 5$
022664  005737  025170           7$:   TST ERSNEG              ;STORE + SIGN?
022670  001403                         BEQ 6$                  ;BRANCH IF YES
022672  112702  000015                 MOVB #15,R2             ;STORE MINUS SIGN
022676  000402                         BR 5$
022700  112702  000014           6$:   MOVB #14,R2             ;STORE POSITIVE SIGN
```

```
 9545  022704  010237  017466                5$:     MOV R2,TEMP             ;HOLD DATA
 9546  022710  012737  000017  025214        4$:     MOV #17,EMASK           ;LOW NIBBLE MASK
 9547  022716  032701  000001                        BIT #1,R1               ;WHICH NIBBLE
 9548  022722  001013                              BNE 2$                  ;LOW
 9549  022724  006337  017466                      ASL TEMP                ;POSITION FOR HIGH NIBBLE
 9550  022730  006337  017466                      ASL TEMP
 9551  022734  006337  017466                      ASL TEMP
 9552  022740  006337  017466                      ASL TEMP
 9553  022744  012737  000360  025214              MOV #360,EMASK          ;NIBBLE MASK
 9554  022752  143710  025214              2$:     BICB EMASK,(R0)         ;CLEAR NIBBLE BEFORE LOAD
 9555  022756  153710  017466                      BISB TEMP,(R0)          ;LOAD NIBBLE
 9556  022762  005737  025220                      TST EODD                ;IF NUMBER IS EVEN LENGTH
 9557  022766  100404                              BMI 3$
 9558  022770  005037  017466                      CLR TEMP                ;AND THIS IS LAST DIGIT
 9559  022774  005301                              DEC R1
 9560  022776  001744                              BEQ 4$                  ;THEN CLEAR UNUSED NIBBLE
 9561  023000  013700  032236              3$:     MOV ETMPR0,R0           ;RESTORE REGISTERS
 9562  023004  013701  032240                      MOV ETMPR1,R1
 9563  023010  013702  032242                      MOV ETMPR2,R2
 9564  023014  000207                              RTS PC
 9565
 9566                                  ;ZONED STRING DIGIT PUSHER
 9567  023016  010037  032236              EPUDTZ: MOV R0,ETMPR0           ;SAVE REGISTER
 9568  023022  010137  032240                      MOV R1,ETMPR1
 9569  023026  042701  070000                      BIC #070000,R1
 9570  023032  010237  032242                      MOV R2,ETMPR2
 9571  023036  042702  177760                      BIC #177760,R2          ;MASK OFF JUNK
 9572  023042  052702  000060                      BIS #60,R2              ;ADD JUNK
 9573  023046  123737  025236  032240              CMPB ELSD,ETMPR1        ;REQUEST TO PUSH SIGN?
 9574  023054  001411                              BEQ 1$                  ;BRANCH IF YES
 9575  023056  060100                              ADD R1,R0               ;WORD ADDRESS
 9576  023060  110210                              MOVB R2,(R0)            ;DEPOSIT DATA
 9577  023062  013700  032236              2$:     MOV ETMPR0,R0           ;RESTORE REGISTER
 9578  023066  013701  032240                      MOV ETMPR1,R1
 9579  023072  013702  032242                      MOV ETMPR2,R2
 9580  023076  000207                              RTS PC
 9581  023100  105737  025236              1$:     TSTB ELSD               ;IS STRING 0 IN LEN
 9582  023104  001015                              BNE 3$                  ;BRANCH IF NO
 9583  023106  122737  000100  032241              CMPB #100,ETMPR1+1      ;IS SIGN = TRAILING SEPARATE
 9584  023114  001001                              BNE 100$
 9585  023116  000472                              BR 14$                  ;PUSH TRAILING SEP SIGN INTO 'A'
 9586  023120  122737  000120  032241      100$:   CMPB #120,ETMPR1+1      ;IS STRING TYPE = LEADING SEPARATE
 9587  023126  001001                              BNE 4$                  ;BRANCH IF NO
 9588  023130  000503                              BR 16$                  ;PUSH LEADING SEPARATE SIGN INTO 'A-1'
 9589  023132  005037  025170              4$:     CLR ERSNEG
 9590  023136  000751                              BR 2$
 9591  023140  122737  000000  032241      3$:     CMPB #000,ETMPR1+1      ;IS TYPE=SIGNED ZONED
 9592  023146  001021                              BNE 5$                  ;BRANCH IF NO
 9593  023150  005737  025170                      TST ERSNEG              ;WHAT SIGN IS TO BE STORED
 9594  023154  001003                              BNE 6$
 9595  023156  112702  000003                      MOVB #3,R2              ;STORE + SIGN
 9596  023162  000402                              BR 7$
 9597  023164  112702  000007              6$:     MOVB #7,R2              ;STORE - SIGN
 9598  023170  060100                      7$:     ADD R1,R0               ;FORM SIGN BYTE ADDRESS
```

```
 9599  023172  142740  000360                        BICB #360,-(R0)         ;CLEAR POSITION FOR SIGN
 9600  023176  006302                                ASL R2                  ;SHIFT SIGN INTO HIGH NIBBLE POSITION
 9601  023200  006302                                ASL R2
 9602  023202  006302                                ASL R2
 9603  023204  006302                                ASL R2
 9604  023206  150210                                BISB R2,(R0)            ;INSERT SIGN
 9605  023210  000724                                BR 2$
 9606  023212  122737  000020  032241        5$:     CMPB #020,ETMPR1+1      ;IS TYPE = UNSIGNED ZONED
 9607  023220  001001                                BNE 10$                 ;BRANCH IF NO
 9608  023222  000743                                BR 4$                   ;SIGN  = 3
 9609  023224  122737  000040  032241        10$:    CMPB #040,ETMPR1+1      ;IS TYPE = TRAILING OVERPUNCHED?
 9610  023232  001016                                BNE 11$
 9611  023234  060100                                ADD R1,R0
 9612  023236  114002                        15$:    MOVB -(R0),R2           ;PICKUP DIGIT TO BE ENCODED WITH SIGN
 9613  023240  042702  000060                        BIC #60,R2              ;STRIP JUNK THAT WAS PREVIOUSLY ADDED.
 9614  023244  005737  025170                        TST ERSNEG              ;IS SIGN NEGATIVE?
 9615  023250  001004                                BNE 12$                 ;BRANCH IF YES
 9616  023252  062702  025250                        ADD #OPEPTB,R2          ;ENCODE DIGIT WITH + SIGN
 9617  023256  111210                        13$:    MOVB (R2),(R0)          ;STORE ENCODED BYTE IN STRING.
 9618  023260  000700                                BR 2$
 9619
 9620  023262  062702  025262                12$:    ADD #OPENTB,R2          ;ENCODE DIGIT WITH - SIGN
 9621  023266  000773                                BR 13$                  ;STORE ENCODED BYTE IN STRING.
 9622  023270  122737  000060  032241        11$:    CMPB #060,ETMPR1+1      ;IS TYPE = LEADING OVERPUNCH?
 9623  023276  001002                                BNE 14$                 ;BRANCH IF NO
 9624  023300  005200                                INC R0                  ;ADJUST R0 TO ENABLE USE
 9625                                                                        ;  OF TRAILING OVERPUNCH ROUTINE
 9626  023302  000755                                BR 15$
 9627
 9628  023304  122737  000100  032241        14$:    CMPB #100,ETMPR1+1      ;IS TYPE=TRAILING SEPARATE?
 9629  023312  001012                                BNE 16$                 ;BRANCH IF NO
 9630  023314  060100                                ADD R1,R0
 9631  023316  005737  025170                21$:    TST ERSNEG              ;IS SIGN NEGATIVE?
 9632  023322  001003                                BNE 17$                 ;BRANCH IF YES
 9633  023324  112710  000053                        MOVB #053,(R0)          ;STORE + SIGN
 9634  023330  000654                                BR 2$
 9635  023332  112710  000055                17$:    MOVB #055,(R0)          ;STORE - SIGN
 9636  023336  000651                                BR 2$
 9637
 9638  023340  122737  000120  032241        16$:    CMPB #120,ETMPR1+1      ;IS TYPE = LEADING SEPARATE?
 9639  023346  001404                                BEQ 20$                 ;BRANCH IF YES
 9640  023350  012737  000001  001114                MOV #1,$MSGTY           ;TELL APT THERE IS A FATAL ERROR::REV-C
 9641  023356  000000                                HALT                    ;ILLEGAL ZONED DATA TYPE
 9642  023360  005300                        20$:    DEC R0
 9643  023362  000755                                BR 21$
 9644
```

```
 9646                                                    .SBTTL  DECIMAL ADDER
 9647  023364  063737  025176  025200  EDCAD:  ; .      ADD EDCOPA,EDCOPB       ;ADD TWO SOURCE DIGITS
 9648  023372  005737  025174                           TST ECARRY              ;ANY CARRY OR BORROW
 9649  023376  001410                                   BEQ 1$                  ;NO
 9650  023400  105737  025175                           TSTB ECARRY+1           ;WHICH ONE
 9651  023404  001403                                   BEQ 2$
 9652  023406  005337  025200                           DEC EDCOPB              ;BORROW
 9653  023412  000402                                   BR 1$
 9654  023414  005237  025200                  2$:      INC EDCOPB              ;CARRY
 9655  023420  005037  025174                  1$:      CLR ECARRY              ;RESET CARRY/BORROW FLAG
 9656  023424  005737  025200                           TST EDCOPB              ;IS RESULT NEGATIVE
 9657  023430  100006                                   BPL 3$                  ;NO
 9658  023432  062737  000012  025200                   ADD #12,EDCOPB          ;MAKE VALUE POSITIVE
 9659  023440  112737  000377  025175                   MOVB #377,ECARRY+1      ;SET BORROW FLAG
 9660  023446  023727  025200  000011          3$:      CMP EDCOPB,#11          ;IS RESULT > 9
 9661  023454  101411                                   BLOS 4$                 ;NO
 9662  023456  062737  000006  025200                   ADD #6,EDCOPB           ;CONVERT TO DECIMAL
 9663  023464  042737  177760  025200                   BIC #177760,EDCOPB
 9664  023472  112737  000377  025174                   MOVB #377,ECARRY
 9665  023500  053737  025200  025212          4$:      BIS EDCOPB,EADSUM       ;RESULT = 0 INDICATOR
 9666  023506  000207                                   RTS PC
 9667
```

```
 9669                                                  .SBTTL  ADDP,ADDN,SUBP,SUBN INSTRUCTIONS
 9670  023510  012737  177777  026430  EADDP:          MOV #177777,EPAK        ;INDICATE PACKED MODE
 9671  023516  000430                                  BR EADSUB
 9672  023520  005037  026430          EADDN:          CLR EPAK                ;INDICATE ZONED MODE
 9673  023524  000425                                  BR EADSUB
 9674  023526  012737  177777  026430  ESUBP:          MOV #177777,EPAK        ;INDICATE PACKED MODE
 9675  023534  012737  177777  025232                  MOV #177777,ESUBF       ;SET SUBTRACT FLAG
 9676  023542  005037  025220                          CLR EODD
 9677  023546  032737  000001  017450                  BIT #1,E0               ;IS NUMBER ODD LENGTH
 9678  023554  001411                                  BEQ EADSUB              ;NO
 9679  023556  012737  177777  025220                  MOV #177777,EODD
 9680  023564  000405                                  BR EADSUB
 9681  023566  005037  026430          ESUBN:          CLR EPAK                ;INDICATE ZONED MODE
 9682  023572  012737  177777  025232                  MOV #177777,ESUBF       ;SET SUBTRACT FLAG
 9683  023600  005037  025222          EADSUB:         CLR EAODD               ;ODD SIZE INDICATORS
 9684  023604  005037  025224                          CLR EBODD
 9685  023610  005037  025226                          CLR ECODD
 9686  023614  013737  017450  025242                  MOV E0,TE0              ;SAVE STRING LEN WORDS
 9687  023622  013737  017454  025244                  MOV E2,TE2
 9688  023630  013737  017460  025246                  MOV E4,TE4
 9689  023636  032737  000001  017450                  BIT #1,E0               ;IF ODD SIZE SET INDICATOR
 9690  023644  001403                                  BEQ 10$                 ;EVEN NO. OF DIGITS
 9691  023646  012737  177777  025222                  MOV #177777,EAODD       ;SHOW ITS ODD
 9692  023654  032737  000001  017454          10$:    BIT #1,E2               ;IF ODD SIZE SET INDICATOR
 9693  023662  001403                                  BEQ 11$                 ;EVEN NO. OF DIGITS
 9694  023664  012737  177777  025224                  MOV #177777,EBODD       ;SHOW ITS ODD
 9695  023672  032737  000001  017460          11$:    BIT #1,E4               ;IS RESULT ODD LENGTH
 9696  023700  001403                                  BEQ 12$                 ;NO
 9697  023702  012737  177777  025226                  MOV #177777,ECODD       ;SET ODD INDICATOR
 9698  023710  013700  017452          12$:    MOV E1,R0               ;FIND SIGN OF SRC1
 9699  023714  013701  017450                  MOV E0,R1
 9700  023720  013737  017450  025236          MOV E0,ELSD
 9701  023726  013737  025222  025220          MOV EAODD,EODD
 9702  023734  004737  021456                  JSR PC,ESNK
 9703  023740  005037  025160                  CLR ES1
 9704  023744  005737  025232                  TST ESUBF               ;SUBTRACT INST?
 9705  023750  001007                          BNE 1$                  ;BRANCH IF YES
 9706  023752  005737  025170                  TST ERSNEG              ;IS SIGN NEGATIVE
 9707  023756  001407                          BEQ 2$                  ;BRANCH IF NO
 9708  023760  012737  177777  025160  3$:     MOV #177777,ES1         ;SET NEGATIVE INDICATOR
 9709  023766  000403                          BR 2$
 9710  023770  005737  025170          1$:     TST ERSNEG              ;SUBT INST  - IS SIGN NEGATIVE
 9711  023774  001771                          BEQ 3$                  ;BRANCH IF NO TO SET NEG. INDICATOR
 9712                                                                  ;NOTE: FOR SUBT, THE SIGN OF SRC1
 9713                                                                  ;      IS INVERTED AND THE ADD IS USED.
 9714  023776  013700  017456          2$:     MOV E3,R0               ;FIND SIGN OF SRC2
 9715  024002  013701  017454                  MOV E2,R1
 9716  024006  013737  017454  025236          MOV E2,ELSD
 9717  024014  013737  025224  025220          MOV EBODD,EODD
 9718  024022  004737  021456                  JSR PC,ESNK
 9719  024026  005037  025162                  CLR ES2
 9720  024032  005737  025170                  TST ERSNEG              ;IS SIGN NEGATIVE?
 9721  024036  001403                          BEQ EADSB1              ;BRANCH IF NO
 9722  024040  012737  177777  025162          MOV #177777,ES2         ;SET NEGATIVE INDICATOR
```

```
 9723
 9724  024046  005037  026440          EADSB1:     CLR EVTSSV              ;RESET RESULT SIZE INDICATOR
 9725  024052  005037  025164                      CLR EANEG               ;RESET SUBTRACT FLAGS
 9726  024056  005037  025166                      CLR EBNEG
 9727  024062  023737  025160  025162              CMP ES1,ES2             ;ADD OR SUBTRACT DISPATCH
 9728  024070  001527                              BEQ EADAD               ;LIKE SIGNS ADD
 9729  024072  113703  017454                      MOVB E2,R3              ;UNLIKE SIGNS SUBTRACT
 9730  024076  123737  017450  017454              CMPB E0,E2              ;WHO IS LONGER
 9731  024104  103402                              BLO 1$
 9732  024106  113703  017450                      MOVB E0,R3              ;MAXIMUM LENGTH
 9733  024112  113704  017450              1$:     MOVB E0,R4              ;POSITION OF SCR1
 9734  024116  113705  017454                      MOVB E2,R5              ;POSITION OF SCR2
 9735  024122  160304                              SUB R3,R4               ;START POSITION
 9736  024124  160305                              SUB R3,R5
 9737  024126  123704  017450              6$:     CMPB E0,R4              ;EXIT HERE INDICATES
 9738  024132  001470                              BEQ EAIS                ;RESULT = 0
 9739  024134  005037  025154                      CLR EOPA                ;RESET DATA REGS
 9740  024140  005037  025156                      CLR EOPB
 9741  024144  005704                              TST R4                  ;IS POSITION OF SCR1 VALID
 9742  024146  100424                              BMI 2$                  ;NO
 9743  024150  013700  017452                      MOV E1,R0               ;GIT A OPERAND
 9744  024154  010401                              MOV R4,R1
 9745  024156  013737  017450  025236              MOV E0,ELSD
 9746  024164  013737  025222  025220              MOV EAODD,EODD
 9747  024172  013737  017450  025240              MOV E0,TEMPE            ;SET TYPE FIELD
 9748  024200  105037  025240                      CLRB TEMPE
 9749  024204  053701  025240                      BIS TEMPE,R1
 9750  024210  004737  021456                      JSR PC,ESNK
 9751  024214  010237  025154                      MOV R2,EOPA             ;DATA FOR COMPARE
 9752  024220  005705                      2$:     TST R5                  ;IS POSITION OF SCR2 VALID
 9753  024222  100424                              BMI 4$          ;NO
 9754  024224  013700  017456                      MOV E3,R0               ;GIT B OPERAND
 9755  024230  010501                              MOV R5,R1
 9756  024232  013737  017454  025236              MOV E2,ELSD
 9757  024240  013737  025224  025220              MOV EBODD,EODD
 9758  024246  013737  017454  025240              MOV E2,TEMPE            ;SET TYPE FIELD
 9759  024254  105037  025240                      CLRB TEMPE
 9760  024260  053701  025240                      BIS TEMPE,R1
 9761  024264  004737  021456                      JSR PC,ESNK
 9762  024270  010237  025156                      MOV R2,EOPB             ;DATA FOR COMPARE
 9763  024274  023737  025154  025156      4$:     CMP EOPA,EOPB           ;WHO IS LARGER
 9764  024302  101004                              BHI EAIS                ;A IS
 9765  024304  103412                              BLO EBIS                ;B  IS
 9766  024306  005204                              INC R4                  ;OH NO THEIR THE SAME
 9767  024310  005205                              INC R5
 9768  024312  000705                              BR 6$
 9769  024314  012737  177777  025166  EAIS:       MOV #177777,EBNEG       ;MAKE B NEGATIVE
 9770  024322  013737  025160  025170              MOV ES1,ERSNEG          ;IF A IS NEGATIVE THEN RESULT IS
 9771  024330  000412                              BR EADAD1
 9772  024332  012737  177777  025164  EBIS:       MOV #177777,EANEG       ;MAKE A NEGATIVE
 9773  024340  013737  025162  025170              MOV ES2,ERSNEG          ;IF B IS NEGATIVE THEN RESULT IS
 9774  024346  000403                              BR EADAD1
 9775  024350  013737  025160  025170  EADAD:     MOV ES1,ERSNEG          ;SIGN OF RESULT
 9776  024356  005037  025212          EADAD1:     CLR EADSUM              ;RESULT =0 INDICATOR
```

```
 9777  024362  013737  025170  025234          MOV ERSNEG,SAVSGN       ;SAVE SIGN OF RESULT
 9778  024370  012700  026234                  MOV #EVRTAB+^D40,R0     ;CLEAR DATA AREA
 9779  024374  005040                  21$:    CLR -(R0)
 9780  024376  020027  026164                  CMP R0,#EVRTAB
 9781  024402  001374                          BNE 21$
 9782  024404  012703  026234                  MOV #EVRTAB+^D40,R3     ;DEST. POINTER
 9783  024410  005037  025174                  CLR ECARRY              ;RESET CARRY
 9784  024414  005037  026434                  CLR EVTPAS              ;RESET PASS COUNTER
 9785  024420  005037  025172          20$:    CLR ENOA                ;NO A OPERAND FLAG
 9786  024424  105337  017450                  DECB E0                 ;A DIGIT POINTER
 9787  024430  100005                          BPL 1$
 9788  024432  005237  025172                  INC ENOA                ;NO DIGITS LEFT
 9789  024436  005037  025176                  CLR EDCOPA              ;DIGIT = 0
 9790  024442  000404                          BR 2$
 9791  024444  004737  024550          1$:     JSR PC,EGTOPA           ;GIT A OPERAND
 9792  024450  010237  025176                  MOV R2,EDCOPA           ;SAVE VALUE
 9793  024454  105337  017454          2$:     DECB E2         ;B DIGIT POINTER
 9794  024460  100006                          BPL 3$
 9795  024462  005737  025172                  TST ENOA                ;NO DIGITS LEFT
 9796  024466  001077                          BNE EXT
 9797  024470  005037  025200                  CLR EDCOPB
 9798  024474  000404                          BR 4$
 9799  024476  004737  024602          3$:     JSR PC,EGTOPB           ;GIT B OPERAND
 9800  024502  010237  025200                  MOV R2,EDCOPB           ;SAVE VALUE
 9801  024506  005737  025164          4$:     TST EANEG               ;WANT A COMPLEMENTED
 9802  024512  100004                          BPL 5$                  ;NO
 9803  024514  005137  025176                  COM EDCOPA              ;YES
 9804  024520  005237  025176                  INC EDCOPA
 9805  024524  005737  025166          5$:     TST EBNEG               ;WANT B COMPLEMENTED
 9806  024530  100004                          BPL 6$
 9807  024532  005137  025200                  COM EDCOPB              ;YES
 9808  024536  005237  025200                  INC EDCOPB
 9809  024542  004737  024634          6$:     JSR PC,EADIT            ;ADD DIGITS STORE RESULT
 9810  024546  000724                          BR 20$
 9811
 9812  024550                          EGTOPA:                         ;SUBROUTINE TO GET 'A' OPERAND
 9813  024550  013700  017452                  MOV E1,R0               ;START ADDRESS OF NUMBER
 9814  024554  013701  017450                  MOV E0,R1               ;DIGIT OF NUMBER
 9815  024560  013737  025222  025220          MOV EAODD,EODD
 9816  024566  013737  025242  025236          MOV TE0,ELSD
 9817  024574  004737  021456                  JSR PC,ESNK             ;CALL ROUTINE TO RETRIEVE DIGIT
 9818  024600  000207                          RTS PC
 9819
 9820  024602                          EGTOPB:                         ;SUBROUTINE TO GET 'B' OPERAND
 9821  024602  013737  025224  025220          MOV EBODD,EODD
 9822  024610  013700  017456                  MOV E3,R0               ;START ADDRESS OF NUMBER
 9823  024614  013701  017454                  MOV E2,R1               ;DIGIT OF NUMBER
 9824  024620  013737  025244  025236          MOV TE2,ELSD
 9825  024626  004737  021456                  JSR PC,ESNK             ;CALL ROUTINE TO RETRIEVE DIGIT
 9826  024632  000207                          RTS PC
 9827
 9828  024634  004737  023364          EADIT:  JSR PC,EDCAD            ;ADD TWO DECIMAL DIGITS
 9829  024640  005237  026434                  INC EVTPAS              ;BUMP PASS COUNTER
 9830  024644  005737  025200                  TST EDCOPB              ;SAVE POSITION OF LAST VALID DIGIT
```

```
9831  024650  001403                          BEQ 1$
9832  024652  013737  026434  026440          MOV EVTPAS,EVTSSV       ;SAVE POSITION
9833  024660  113743  025200          1$:     MOVB EDCOPB,-(R3)       ;SAVE RESULT
9834  024664  000207                          RTS PC
9835  024666  005037  032254          EXT:    CLR ENZI                ;INITIALIZE NONZERO DIGIT STORED INDICATOR TO ZE
9836  024672  105737  025174                  TSTB ECARRY             ;ANY CARRY FROM LAST ADD
9837  024676  100007                          BPL 1$                  ;NO
9838  024700  112743  000001                  MOVB #1,-(R3)           ;ADD CARRY TO WORD
9839  024704  005237  026434                  INC EVTPAS              ;BUMP PASS COUNTER
9840  024710  013737  026434  026440          MOV EVTPAS,EVTSSV       ;STORE POSITION
9841  024716  012703  026234          1$:     MOV #EVRTAB+^D40,R3     ;ADDRESS OF DATA
9842  024722  105337  017460          2$:     DECB E4                 ;LAST TRANSFER COMPLETE
9843  024726  100423                          BMI 3$                  ;YES
9844  024730  013700  017462                  MOV E5,R0               ;START ADDRESS OF DEST.
9845  024734  013701  017460                  MOV E4,R1               ;DIGIT POSITION
9846  024740  114302                          MOVB -(R3),R2           ;DATA TO DEPOSIT
9847  024742  005702                          TST R2                  ;CHECK DIGIT BEING STORED IN DST
9848  024744  001403                          BEQ 7$
9849  024746  012737  177777  032254          MOV #177777,ENZI        ;DIGIT NOT = 0, SET INDICATOR
9850  024754  013737  025226  025220  7$:     MOV ECODD,EODD
9851  024762  013737  025246  025236          MOV TE4,ELSD
9852  024770  004737  022540                  JSR PC,EPUSH            ;CALL ROUTINE TO PUSH DIGIT ONTO DST STRING
9853  024774  000752                          BR 2$
9854  024776  013701  025246          3$:     MOV TE4,R1              ;POSITION OF SIGN
9855  025002  013737  025234  025170          MOV SAVSGN,ERSNEG       ;SETUP ERSNEG WITH RESULT SIGN
9856  025010  013737  025246  025236          MOV TE4,ELSD
9857  025016  005737  026440                  TST EVTSSV              ;IF ZERO, SIGN = +
9858  025022  001002                          BNE 10$
9859  025024  005037  025170                  CLR ERSNEG              ;SET POSITIVE
9860  025030  013700  017462          10$:    MOV E5,R0               ;START OF DEST.
9861  025034  013737  025226  025220          MOV ECODD,EODD
9862  025042  004737  022540                  JSR PC,EPUSH            ;SAVE SIGN
9863  025046  005077  172374          EXT1:   CLR @EOPSW              ;RESET EMULATE PSW
9864  025052  005737  032254                  TST ENZI                ;IF = 0 SET Z BIT & SKIP OVER SETTING OF N BIT.
9865  025056  001407                          BEQ 1$
9866  025060  005737  025170                  TST ERSNEG              ;IF (-) SET N BIT
9867  025064  100007                          BPL 2$
9868  025066  052777  000010  172352          BIS #10,@EOPSW          ;SET N BIT
9869  025074  000403                          BR 2$
9870  025076  052777  000004  172342          BIS #4,@EOPSW           ;COMP. LENGTH FOR OVERFLOW
9871  025104  123737  025246  026440  2$:     CMPB TE4,EVTSSV         ;FIND LENGTH OF RESULT
9872  025112  103003                          BHIS 4$
9873  025114  052777  000002  172324          BIS #2,@EOPSW           ;SET OVERFLOW
9874  025122  013702  017444          4$:     MOV EORSTK,R2           ;REGISTER UNLOAD
9875  025126  005022                          CLR (R2)+               ;R0 = 0
9876  025130  005022                          CLR (R2)+               ;R1 = 0
9877  025132  005022                          CLR (R2)+               ;R2 = 0
9878  025134  005022                          CLR (R2)+               ;R3 = 0
9879  025136  013722  025246                  MOV TE4,(R2)+           ;R4 = R4
9880  025142  013722  017462                  MOV E5,(R2)+            ;R5 = R5
9881  025146  005037  025232                  CLR ESUBF               ;CLEAR SUBTRACT FLAG
9882  025152  000207                          RTS PC
```

```
 9884  025154  000000                EOPA:           .WORD 0
 9885  025156  000000                EOPB:           .WORD 0
 9886  025160  000000                ES1:            .WORD 0
 9887  025162  000000                ES2:            .WORD 0
 9888  025164  000000                EANEG:          .WORD 0
 9889  025166  000000                EBNEG:          .WORD 0
 9890  025170  000000                ERSNEG:         .WORD 0
 9891  025172  000000                ENOA:           .WORD 0
 9892  025174  000000                ECARRY:         .WORD 0
 9893  025176  000000                EDCOPA:         .WORD 0
 9894  025200  000000                EDCOPB:         .WORD 0
 9895  025202  000000                EFINDA:         .WORD 0
 9896  025204  000000                ESGNA:          .WORD 0
 9897  025206  000000                ESGNB:          .WORD 0
 9898  025210  000000                ESGNC:          .WORD 0
 9899  025212  000000                EADSUM:         .WORD 0
 9900  025214  000000                EMASK:          .WORD 0
 9901  025216  000000                TEMP1:          .WORD 0
 9902  025220  000000                EODD:           .WORD 0
 9903  025222  000000                EAODD:          .WORD 0
 9904  025224  000000                EBODD:          .WORD 0
 9905  025226  000000                ECODD:          .WORD 0
 9906  025230  000000                ESLSD:          .WORD 0
 9907  025232  000000                ESUBF:          .WORD 0
 9908  025234  000000                SAVSGN:         .WORD 0
 9909  025236  000000                ELSD:   .WORD 0
 9910  025240  000000                TEMPE:  .WORD 0
 9911  025242  000000                TE0:    .WORD 0
 9912  025244  000000                TE2:    .WORD 0
 9913  025246  000000                TE4:    .WORD 0
 9914  025250                        OPEPTB:
 9915  025250      173                       .BYTE 173               ;OVERPUNCH SIGN DIGIT (PREFERRED ENCODINGS)
 9916  025251      101                       .BYTE 101               ;+0
 9917  025252      102                       .BYTE 102               ;+1
 9918  025253      103                       .BYTE 103               ;+2
 9919  025254      104                       .BYTE 104               ;+3
 9920  025255      105                       .BYTE 105               ;+4
 9921  025256      106                       .BYTE 106               ;+5
 9922  025257      107                       .BYTE 107               ;+6
 9923  025260      110                       .BYTE 110               ;+7
 9924  025261      111                       .BYTE 111               ;+8
 9925  025262      175               OPENTB: .BYTE 175               ;+9
 9926  025263      112                       .BYTE 112               ;-0
 9927  025264      113                       .BYTE 113               ;-1
 9928  025265      114                       .BYTE 114               ;-2
 9929  025266      115                       .BYTE 115               ;-3
 9930  025267      116                       .BYTE 116               ;-4
 9931  025270      117                       .BYTE 117               ;-5
 9932  025271      120                       .BYTE 120               ;-6
 9933  025272      121                       .BYTE 121               ;-7
 9934  025273      122                       .BYTE 122               ;-8
 9935  025274  000000                SGNBYT: .WORD 0                 ;-9
```

```
                                        .SBTTL                  CVTLP,Z INSTRUCTIONS
                                ;       CONVERT LONG FORMAT NUMBERS INTO DECIMAL
                                ;   IN EITHER PACKED OR ZONED FORMAT.
                                ;-------------------------------------------------------------
025276  005037  026430          ECVTLN:     CLR EPAK                ;ZONED FORMATED OUTPUT
025302  000403                              BR ECVT
025304  012737  177777  026430  ECVTLP:     MOV #177777,EPAK        ;PACKED FORMAT OUTPUT
025312  005037  025220          ECVT:       CLR EODD                ;RESET ODD INDICATORS
025316  005037  026440                      CLR EVTSSV
025322  005037  025176                      CLR EDCOPA
025326  005037  025200                      CLR EDCOPB
025332  005037  026436                      CLR ESCF
025336  032737  000001  017450            BIT #1,E0               ;IF ODD SET ODD FLAG
025344  001403                            BEQ 10$                 ;EVEN NO. OF DIGITS
025346  012737  177777  025220            MOV #177777,EODD        ;SET ODD FLAG
025354  012700  026200          10$:      MOV #EVRTAB+14,R0       ;CLEAR DATA TABLE
025360  013702  017454                    MOV E2,R2               ;DATA TO BE CONVERTED
025364  013703  017456                    MOV E3,R3
025370  005040                  1$:       CLR -(R0)               ;
025372  022700  026164                    CMP #EVRTAB,R0          ;CLEAR COMPLETE
025376  001374                            BNE 1$                  ;NO
025400  005037  026432                    CLR EVTSGN              ;CLEAR OLD SIGN INFO
025404  005702                            TST R2                  ;IS DATA NEGATIVE
025406  100026                            BPL 2$                  ;NO
025410  112737  000377  026432            MOVB #377,EVTSGN        ;YES , SAVE SIGN
025416  005103                            COM R3                  ;NEGATE DATA
025420  005102                            COM R2
025422  022703  177777                    CMP #177777,R3          ;CHECK FOR SPECIAL CASE - MOST NEG #.
025426  001007                            BNE 6$                  ;BRANCH IF THIS IS NOT THE SPECIAL CASE
025430  022702  077777                    CMP #077777,R2          ;FOR MOST NEG # SRC HIGH =100000, SRC LOW = 0.
025434  001004                            BNE 6$                  ;BRANCH IF NOT THE SPECIAL CASE
025436  012737  177777  026436            MOV #177777,ESCF        ;SET SPECIAL CASE FLAG
025444  000405                            BR 3$
025446  000257                  6$:       CCC
025450  062703  000001                    ADD #1,R3
025454  103001                            BCC 3$                  ;BRANCH IF NO CARRY FROM FIRST WORD
025456  005202                            INC R2                  ;YES
025460  042702  100000          3$:       BIC #100000,R2          ;CLEAR SIGN BIT
025464  005037  026434          2$:       CLR EVTPAS              ;RESET PASS COUNTER
025470  023727  026434  000174  5$:       CMP EVTPAS,#^D124       ;31 PASSES COMPLETE YET
025476  001460                            BEQ EVTWRP              ;WRAP UP ROUTEEN
025500  000257                            CCC                     ;CLEAR CC BITS FOR 32 BIT SHIFT
025502  006002                            ROR R2                  ;SHIFT LOB INTO R3
025504  006003                            ROR R3                  ;SHIFT LOB FOR VALUE
025506  103002                            BCC 4$                  ;IF NOT SET BIT HAS NO VALUE
025510  004737  025524                    JSR PC,EVRTAD           ;ADD BIT VALUE TO DECIMAL NUMBER
025514  062737  000004  026434  4$:       ADD #4,EVTPAS           ;BUMP PASS COUNTER
025522  000762                            BR 5$                   ;NEXT PASS
025524  005037  025174  EVRTAD:           CLR ECARRY              ;RESET CARRY/BORROW FLAGS
025530  012700  026176                    MOV #EVRTAB+12,R0       ;A OPERAND POINTER
025534  013704  026434                    MOV EVTPAS,R4           ;TABLE OFFSET
025540  062704  026442                    ADD #EVTABA,R4          ;TABLE START ADDRESS
025544  012401                            MOV (R4)+,R1            ;START ADDRESS OF DATA
025546  061401                            ADD (R4),R1             ;END ADDRESS OF DATA
```

```
 9991  025550  011404                          MOV (R4),R4             ;NO. OF DIGITS
 9992  025552  010437  026440                  MOV R4,EVTSSV
 9993  025556  114037  025176          1$:     MOVB -(R0),EDCOPA       ;FIND A OPERAND
 9994  025562  114137  025200                  MOVB -(R1),EDCOPB       ;FIND B OPERAND
 9995  025566  004737  023364                  JSR PC,EDCAD            ;ADD
 9996  025572  113710  025200                  MOVB EDCOPB,(R0)        ;SAVE RESULT
 9997  025576  005304                          DEC R4                  ;IS THIS LAST DIGIT
 9998  025600  001366                          BNE 1$                  ;NO
 9999  025602  105737  025174          2$:     TSTB ECARRY             ;ANY CARRY
10000  025606  100401                          BMI 3$                  ;YES
10001  025610  000207                          RTS PC
10002  025612  005237  026440          3$:     INC EVTSSV
10003  025616  114037  025176                  MOVB -(R0),EDCOPA       ;A OPERAND
10004  025622  005037  025200                  CLR EDCOPB              ;NO B OPERAND
10005  025626  004737  023364                  JSR PC,EDCAD            ;ADD THE CARRY
10006  025632  113710  025200                  MOVB EDCOPB,(R0)                ;SAVE RESULT
10007  025636  000761                          BR 2$
10008  025640  005037  026424  EVTWRP:         CLR ENULL               ;RESET RESULT = 0 INDICATOR
10009  025644  013737  026432  025170          MOV EVTSGN,ERSNEG       ;SETUP SIGN INDICATOR
10010  025652  012704  026176                  MOV #EVRTAB+12,R4       ;SETUP POINTER TO CONVERT RESULT
10011  025656  113701  017450                  MOVB E0,R1
10012  025662  160104                          SUB R1,R4
10013  025664  013737  017450  025236          MOV E0,ELSD             ;SETUP POINTER TO LEAST SIGN. DIGIT
10014  025672  113737  017450  026426          MOVB E0,EPOPS
10015  025700  005337  026426                  DEC EPOPS
10016  025704  013701  017450                  MOV E0,R1               ;SETUP POSITION OF # TO INSERT = 0
10017  025710  042701  000377                  BIC #377,R1
10018  025714  013700  017452                  MOV E1,R0               ;SETUP ADDRESS OF # TO LOAD
10019  025720  005002                  2$:     CLR R2                  ;SETUP DATA TO LOAD
10020  025722  020427  026164                  CMP R4,#EVRTAB
10021  025726  103403                          BLO 1$
10022  025730  111402                          MOVB (R4),R2
10023  025732  050237  026424                  BIS R2,ENULL
10024  025736  005204                  1$:     INC R4
10025  025740  004737  022540                  JSR PC,EPUSH            ;CALL ROUTINE TO PUSH DIGIT INTO STRING
10026  025744  120137  026426                  CMPB R1,EPOPS           ;READY TO PUSH SIGN?
10027  025750  001004                          BNE 3$                  ;BRANCH IF NO
10028  025752  005737  026436                  TST ESCF                ;SPECIAL CASE?
10029  025756  001401                          BEQ 3$                  ;BRANCH IF NO
10030  025760  000405                          BR EVTXT                ;WORK WITH SPECIAL CASE BEFORE INSERTING SIGN.
10031  025762  020137  017450          3$:     CMP R1,E0               ;ALL DIGITS PLUS SIGN PUSHED?
10032  025766  001402                          BEQ EVTXT               ;BRANCH IF YES
10033  025770  005201                          INC R1
10034  025772  000752                          BR 2$                   ;RETURN TO PUSH NEXT DIGIT
10035
10036  025774  105737  017450  EVTXT:          TSTB E0                 ;IF DST.LEN=0 ,DON'T BOTHER TESTING
10037                                                                  ;  FOR SPECIAL CASE.
10038  026000  001425                          BEQ 5$
10039  026002  005737  026436                  TST ESCF                ;SPECIAL CASE? (MOST NEG #).
10040  026006  001422                          BEQ 5$                  ;BRANCH IF NO.
10041  026010  013737  017450  025236          MOV E0,ELSD
10042  026016  013701  017450                  MOV E0,R1
10043  026022  005301                          DEC R1                  ;SET R1=DST.LEN-1.
10044  026024  013700  017452                  MOV E1,R0               ;INCREMENT LEAST SIGN DIGIT TO 8.
```

```
10045  026030  012702  000010                    MOV #10,R2
10046  026034  004737  022540                    JSR PC,EPUSH          ;CALL ROUTINE TO PUSH THE 8 INTO DEST.
10047  026040  005201                            INC R1                ;INSERT NEGATIVE SIGN
10048  026042  012737  177777  025170            MOV #177777,ERSNEG
10049  026050  004737  022540              7$:   JSR PC,EPUSH          ;CALL ROUTINE TO PUSH NEG SIGN INTO DEST.
10050  026054  005077  171366              5$:   CLR @EOPSW            ;INIT EMULATE PSW
10051  026060  005737  026424                    TST ENULL             ;IF = 0 SET Z BIT; SKIP SETTING OF N BIT
10052  026064  001407                            BEQ 1$
10053  026066  105737  025170                    TSTB ERSNEG           ;IF (-) SET N BIT
10054  026072  100007                            BPL 2$
10055  026074  052777  000010  171344            BIS #10,@EOPSW        ;SET N BIT
10056  026102  000403                            BR 2$
10057  026104  052777  000004  171334      1$:   BIS #4,@EOPSW         ;SET Z BIT
10058  026112  123737  017450  026440      2$:   CMPB E0,EVTSSV
10059  026120  103003                            BHIS 4$
10060  026122  052777  000002  171316            BIS #2,@EOPSW         ;SET OVERFLOW
10061  026130  013702  017444              4$:   MOV EORSTK,R2         ;REGISTER UNLOAD
10062  026134  013722  017450                    MOV E0,(R2)+          ;R0 =R0
10063  026140  013722  017452                    MOV E1,(R2)+          ;R1 = R1
10064  026144  005022                            CLR (R2)+             ;R2 = 0
10065  026146  005022                            CLR (R2)+             ;R3 = 0
10066  026150  013722  017460                    MOV E4,(R2)+          ;R4 = R4
10067  026154  013712  017462                    MOV E5,(R2)           ;R5 = R5
10068  026160  000207                            RTS PC
10069  026162  000000                            .WORD 0               ;MUST PRECEDE EVRTAB!!
10070  026164  000240                EVRTAB:     .BLKB ^D160
10071  026424  000000                ENULL:      .WORD 0
10072  026426  000000                EPOPS:      .WORD 0
10073  026430  000000                EPAK:       .WORD 0
10074  026432  000000                EVTSGN:     .WORD 0
10075  026434  000000                EVTPAS:     .WORD 0
10076  026436  000000                ESCF:       .WORD 0
10077  026440  000000                EVTSSV:     .WORD 0
10078  026442  026636  000001        EVTABA:     .WORD E00,1
10079  026446  026637  000001                    .WORD E01,1
10080  026452  026640  000001                    .WORD E02,1
10081  026456  026641  000001                    .WORD E03,1
10082  026462  026642  000002                    .WORD E04,2
10083  026466  026644  000002                    .WORD E05,2
10084  026472  026646  000002                    .WORD E06,2
10085  026476  026650  000003                    .WORD E07,3
10086  026502  026653  000003                    .WORD E08,3
10087  026506  026656  000003                    .WORD E09,3
10088  026512  026661  000004                    .WORD E10,4
10089  026516  026665  000004                    .WORD E11,4
10090  026522  026671  000004                    .WORD E12,4
10091  026526  026675  000004                    .WORD E13,4
10092  026532  026701  000005                    .WORD E14,5
10093  026536  026706  000005                    .WORD E15,5
10094  026542  026713  000005                    .WORD E16,5
10095  026546  026720  000006                    .WORD E17,6
10096  026552  026726  000006                    .WORD E18,6
10097  026556  026734  000006                    .WORD E19,6
10098  026562  026742  000007                    .WORD E20,7
```

```
10099  026566  026751  000007                          .WORD E21,7
10100  026572  026760  000007                          .WORD E22,7
10101  026576  026767  000007                          .WORD E23,7
10102  026602  026776  000010                          .WORD E24,10
10103  026606  027006  000010                          .WORD E25,10
10104  026612  027016  000010                          .WORD E26,10
10105  026616  027026  000011                          .WORD E27,11
10106  026622  027037  000011                          .WORD E28,11
10107  026626  027050  000011                          .WORD E29,11
10108  026632  027061  000012                          .WORD E30,12
10109  026636     001                 E00:             .BYTE ^D1
10110  026637     002                 E01:             .BYTE ^D2
10111  026640     004                 E02:             .BYTE ^D4
10112  026641     010                 E03:             .BYTE ^D8
10113  026642     001      006        E04:             .BYTE ^D1,^D6
10114  026644     003      002        E05:             .BYTE ^D3,^D2
10115  026646     006      004        E06:             .BYTE ^D6,^D4
10116  026650     001      002   010  E07:             .BYTE ^D1,^D2,^D8
10117  026653     002      005   006  E08:             .BYTE ^D2,^D5,^D6
10118  026656     005      001   002  E09:             .BYTE ^D5,^D1,^D2
10119  026661     001      000   002  E10:             .BYTE ^D1,^D0,^D2,^D4
       026664     004
10120  026665     002      000   004  E11:             .BYTE ^D2,^D0,^D4,^D8
       026670     010
10121  026671     004      000   011  E12:             .BYTE ^D4,^D0,^D9,^D6
       026674     006
10122  026675     010      001   011  E13:             .BYTE ^D8,^D1,^D9,^D2
       026700     002
10123  026701     001      006   003  E14:             .BYTE ^D1,^D6,^D3,^D8,^D4
       026704     010      004
10124  026706     003      002   007  E15:             .BYTE ^D3,^D2,^D7,^D6,^D8
       026711     006      010
10125  026713     006      005   005  E16:             .BYTE ^D6,^D5,^D5,^D3,^D6
       026716     003      006
10126  026720     001      003   001  E17:             .BYTE ^D1,^D3,^D1,^D0,^D7,^D2
       026723     000      007   002
10127  026726     002      006   002  E18:             .BYTE ^D2,^D6,^D2,^D1,^D4,^D4
       026731     001      004   004
10128  026734     005      002   004  E19:             .BYTE ^D5,^D2,^D4,^D2,^D8,^D8
       026737     002      010   010
10129  026742     001      000   004  E20:             .BYTE ^D1,^D0,^D4,^D8,^D5,^D7,^D6
       026745     010      005   007
       026750     006
10130  026751     002      000   011  E21:             .BYTE ^D2,^D0,^D9,^D7,^D1,^D5,^D2
       026754     007      001   005
       026757     002
10131  026760     004      001   011  E22:             .BYTE ^D4,^D1,^D9,^D4,^D3,^D0,^D4
       026763     004      003   000
       026766     004
10132  026767     010      003   010  E23:             .BYTE ^D8,^D3,^D8,^D8,^D6,^D0,^D8
       026772     010      006   000
       026775     010
10133  026776     001      006   007  E24:             .BYTE ^D1,^D6,^D7,^D7,^D7,^D2,^D1,^D6
       027001     007      007   002
```

```
            027004      001     006
10134       027006      003     003     005  E25:        .BYTE ^D3,^D3,^D5,^D5,^D4,^D4,^D3,^D2
            027011      005     004     004
            027014      003     002
10135       027016      006     007     001  E26:        .BYTE ^D6,^D7,^D1,^D0,^D8,^D8,^D6,^D4
            027021      000     010     010
            027024      006     004
10136       027026      001     003     004  E27:        .BYTE ^D1,^D3,^D4,^D2,^D1,^D7,^D7,^D2,^D8
            027031      002     001     007
            027034      007     002     010
10137       027037      002     006     010  E28:        .BYTE ^D2,^D6,^D8,^D4,^D3,^D5,^D4,^D5,^D6
            027042      004     003     005
            027045      004     005     006
10138       027050      005     003     006  E29:        .BYTE ^D5,^D3,^D6,^D8,^D7,^D0,^D9,^D1,^D2
            027053      010     007     000
            027056      011     001     002
10139       027061      001     000     007  E30:        .BYTE ^D1,^D0,^D7,^D3,^D7,^D4,^D1,^D8,^D2,^D4
            027064      003     007     004
            027067      001     010     002
            027072      004
10140                027074                   .EVEN
```

```
10142                                           .SBTTL                  CONVERT PACKED OR ZONED TO LONG
10143                                   ;       CONVERT A NUMBER THAT IS IN EITHER PACKED OR
10144                                   ;   ZONED FORMAT INTO LONG FORMAT.          (CVTPL,CVTNL)
10145                                   ;-------------------------------------------------------------
10146  027074  005037  026430          ECVTNL: CLR EPAK                ;ZONED FORMAT INPUT
10147  027100  000403                          BR EZL1
10148  027102  012737  177777  026430  ECVTPL: MOV #177777,EPAK        ;PACKED FORMAT INPUT
10149  027110  005037  027634          EZL1:   CLR EFLO                ;RESET OVERFLOW
10150  027114  005037  025220                  CLR EODD                ;RESET ODD LENGTH INDICATOR
10151  027120  005003                          CLR R3                  ;CLEAR RESULT DATA AREA
10152  027122  005004                          CLR R4
10153  027124  005037  026424                  CLR ENULL               ;RESET NULL INDICATOR
10154  027130  032737  000001  017450          BIT #1,E0               ;IS SOURCE ODD OR EVEN NO. OF DIGITS
10155  027136  001403                          BEQ 1$                  ;ITS EVEN
10156  027140  012737  177777  025220          MOV #177777,EODD        ;ODD
10157                                   ;
10158                                   ;       FIND SIGN OF NUMBER
10159  027146  013701  017450          1$:     MOV E0,R1               ;SETUP POSITION OF SIGN
10160  027152  013737  017450  025236          MOV E0,ELSD             ;SETUP POSITION OF LEAST SIGN DIGIT.
10161  027160  013700  017452                  MOV E1,R0               ;SETUP ADDRESS OF STRING
10162  027164  004737  021456                  JSR PC,ESNK             ;CALL ROUTINE TO FIND SIGN
10163  027170  005037  025160                  CLR ES1
10164  027174  005737  025170                  TST ERSNEG              ;IS SIGN NEGATIVE?
10165  027200  001403                          BEQ EZL2                ;BRANCH IF NO
10166  027202  012737  177777  025160          MOV #177777,ES1         ;YES - SET NEGATIVE FLAG
10167                                   ;
10168                                   ;       CONVERTER
10169                                   ;               CLEAR RESULT
10170                                   ;               FOR COUNT = 1 TO LENGTH
10171                                   ;               RESULT = (RESULT*10)+DIGIT<MSD+COUNT>
10172                                   ;               NEXT COUNT
10173  027210  013737  017450  027636  EZL2:           MOV E0,ECOUN            ;RESET COUNT(UPPER BYTE OF ECOUN MUST
10174                                                                          ;  CONTAIN TYPE)
10175  027216  042737  000377  027636                  BIC #377,ECOUN
10176  027224  013737  017450  025236                  MOV E0,ELSD
10177  027232  123737  027636  017450          10$:    CMPB ECOUN,E0           ;CONVERSION COMPLETE YET
10178  027240  001474                          BEQ EZLE                ;YES
10179  027242  013701  027636                  MOV ECOUN,R1            ;POSITION OF SOURCE
10180  027246  013700  017452                  MOV E1,R0               ;START ADDRESS OF SOURCE
10181  027252  004737  021456                  JSR PC,ESNK             ;CALL ROUTINE TO FIND DIGIT
10182  027256  005237  027636          2$:     INC ECOUN               ;BUMP COUNTER
10183  027262  050237  026424                  BIS R2,ENULL            ;DIGIT SUM FOR NULL TEST
10184  027266  000257                          CCC                     ;MULTIPLY RESULT BY 10
10185  027270  006104                          ROL R4
10186  027272  006103                          ROL R3
10187  027274  103003                          BCC 3$                  ;ANY BIT SHIFTED OUT IS OVERFLOW
10188  027276  012737  177777  027634          MOV #177777,EFLO
10189  027304  010337  017466          3$:     MOV R3,TEMP             ;TEMP DATA HOLD FOR MULTIPLY
10190  027310  010437  025216                  MOV R4,TEMP1
10191  027314  000257                          CCC
10192  027316  006104                          ROL R4
10193  027320  006103                          ROL R3
10194  027322  103003                          BCC 4$
10195  027324  012737  177777  027634          MOV #177777,EFLO
```

```
10196  027332  000257                      4$:     CCC
10197  027334  006104                              ROL R4
10198  027336  006103                              ROL R3
10199  027340  103003                              BCC 5$
10200  027342  012737  177777  027634              MOV #177777,EFLO
10201  027350  063704  025216              5$:     ADD TEMP1,R4            ;COMPLETE MULTIPLY
10202  027354  103007                              BCC 6$
10203  027356  000257                              CCC
10204  027360  062703  000001                      ADD #1,R3
10205  027364  103003                              BCC 6$
10206  027366  012737  177777  027634              MOV #177777,EFLO
10207  027374  063703  017466              6$:     ADD TEMP,R3
10208  027400  103003                              BCC 8$
10209  027402  012737  177777  027634              MOV #177777,EFLO
10210  027410  060204                      8$:     ADD R2,R4               ;ADD NEW DIGIT
10211  027412  103307                              BCC 10$
10212  027414  062703  000001                      ADD #1,R3
10213  027420  103304                              BCC 10$
10214  027422  012737  177777  027634              MOV #177777,EFLO
10215  027430  000700                              BR 10$
10216                          ;
10217                          ;                   SET CC BITS , SET RESULT REGISTERS
10218  027432  005703          EZLE:               TST R3                  ;BIT 32= 1 IS OVERFLOW EXCEPT IF
10219                                                                      ; ALL OTHER 31 BITS = 0 & SRC WAS NEGATIVE
10220  027434  100013                              BPL 6$                  ;BRANCH IF OK
10221  027436  005704                              TST R4                  ;ALL OTHER 31 BITS = 0?
10222  027440  001006                              BNE 7$                  ;BRANCH IF NO
10223  027442  032703  077777                      BIT #77777,R3
10224  027446  001003                              BNE 7$                  ;BRANCH IF NO
10225  027450  005737  025160                      TST ES1                 ;WAS SRC NEGATIVE?
10226  027454  100403                              BMI 6$                  ;BRANCH IF YES
10227  027456  012737  177777  027634      7$:     MOV #177777,EFLO        ;ELSE OVERFLOW
10228  027464  005077  167756              6$:     CLR @EOPSW              ;RESET PSW
10229  027470  005737  027634                      TST EFLO                ;ANY OVERFLOW
10230  027474  001403                              BEQ 1$                  ;NO
10231  027476  052777  000002  167742              BIS #2,@EOPSW           ;SET V BIT
10232  027504  005704                      1$:     TST R4                  ;WAS RESULT = 0
10233  027506  001006                              BNE 5$                  ;NO
10234  027510  005703                              TST R3
10235  027512  001004                              BNE 5$                  ;NO
10236  027514  052777  000004  167724              BIS #4,@EOPSW           ;SET Z BIT
10237  027522  000412                              BR 2$
10238  027524  005737  025160              5$:     TST ES1                 ;WHAT SIGN
10239  027530  100007                              BPL 2$                  ;POSITIVE
10240  027532  005103                              COM R3                  ;COMPLEMENT VALUE
10241  027534  005104                              COM R4
10242  027536  000257                              CCC
10243  027540  062704  000001                      ADD #1,R4
10244  027544  103001                              BCC 2$
10245  027546  005203                              INC R3
10246  027550  005703                      2$:     TST R3                  ;SET N BIT BASED ON SIGN OF RESULT
10247  027552  100003                              BPL 3$                  ;IF RESULT SIGN =+ BRANCH
10248  027554  052777  000010  167664              BIS #10,@EOPSW          ;SET N BIT
10249  027562  032777  000004  167656      3$:     BIT #4,@EOPSW           ;WAS DST = 0
```

```
10250  027570  001006                          BNE 4$                  ;YES
10251  027572  005737  025160                  TST ES1                 ;AND WAS SOURCE NEGATIVE
10252  027576  100003                          BPL 4$                  ;NO
10253  027600  052777  000001  167640          BIS #1,@EOPSW           ;YES , THEN SET C BIT
10254  027606  013700  017444          4$:     MOV EORSTK,R0           ;REGISTER SAVE
10255  027612  005020                          CLR (R0)+               ;R0 =0
10256  027614  005020                          CLR (R0)+               ;R1 = 0
10257  027616  010320                          MOV R3,(R0)+            ;R2 = DST HIGH
10258  027620  010420                          MOV R4,(R0)+            ;R3 =  DST LOW
10259  027622  013720  017460                  MOV E4,(R0)+            ;R4 = R4
10260  027626  013720  017462                  MOV E5,(R0)+            ;R5 = R5
10261  027632  000207                          RTS PC
10262  027634  000000                  EFLO:   .WORD 0
10263  027636  000000                  ECOUN:  .WORD 0
```

```
10265                                                   .SBTTL  CONVERT PACKED TO ZONED
10266  027640  012737  177777  026430  ECVTPN:         MOV #177777,EPAK        ;SET PACKED MODE INDICATOR
10267  027646  005037  026440                         CLR EVTSSV              ;RESET PASS COUNTER
10268  027652  005037  026424                         CLR ENULL               ;RESET NULL INDICATOR
10269  027656  005077  167564                         CLR @EOPSW              ;RESET EMULATE PSW
10270  027662  013737  017450  025176                 MOV E0,EDCOPA           ;START POSITION OF SOURCE
10271  027670  013737  017454  025200                 MOV E2,EDCOPB           ;START POSITION OF DEST.
10272  027676  005037  025220                         CLR EODD                ;IS SOURCE ODD OR EVEN NUMBER
10273  027702  032737  000001  017450                 BIT #1,E0               ;OF DIGITS
10274  027710  001403                                 BEQ EPZ1                ;ITS EVEN
10275  027712  012737  177777  025220                 MOV #177777,EODD        ;ITS ODD
10276  027720  004737  030662          EPZ1:          JSR PC,EFMSD            ;DETERMINE POSITION OF MOST SIGN SRC DIGIT
10277  027724  005002                                 CLR R2
10278  027726  105337  025176                         DECB EDCOPA             ;END OF SOURCE YET
10279  027732  100414                                 BMI 1$                  ;YES
10280  027734  042777  000001  167504                 BIC #1,@EOPSW           ;RESET END OF SOURCE FLAG
10281  027742  013700  017452                         MOV E1,R0               ;START ADDRESS OF SOURCE
10282  027746  013701  025176                         MOV EDCOPA,R1           ;POSITION OF DIGIT
10283  027752  013737  017450  025236                 MOV E0,ELSD
10284  027760  004737  021500                         JSR PC,EFINDT           ;GRAB DIGIT
10285  027764  105337  025200          1$:            DECB EDCOPB             ;END OF DEST. YET
10286  027770  100421                                 BMI EPZE                ;YES
10287  027772  005237  026440                         INC EVTSSV              ;DIGIT POSITION
10288  027776  005702                                 TST R2                  ;IS DIGIT ZERO
10289  030000  001403                                 BEQ 2$
10290  030002  013737  026440  026424                 MOV EVTSSV,ENULL        ;POSITION OF LAST NON ZERO DIGIT STORED.
10291  030010  013700  017456          2$:            MOV E3,R0               ;START ADDRESS OF DEST
10292  030014  013701  025200                         MOV EDCOPB,R1           ;POSITION OF DIGIT
10293  030020  013737  017454  025236                 MOV E2,ELSD
10294  030026  004737  023016                         JSR PC,EPUDTZ           ;SAVE DIGIT
10295  030032  000732                                 BR EPZ1                 ;LOOP TILL COMPLETE
10296  030034  013700  017452          EPZE:          MOV E1,R0               ;START ADDRESS OF SOURCE
10297  030040  013701  017450                         MOV E0,R1               ;POSITION OF SIGN
10298  030044  013737  017450  025236                 MOV E0,ELSD
10299  030052  004737  021500                         JSR PC,EFINDT           ;GRAB SIGN
10300  030056  005037  025160                         CLR ES1                 ;RESET SIGN FLAG
10301  030062  005737  025170                         TST ERSNEG              ;IS SOURCE NEG?
10302  030066  001406                                 BEQ 2$                  ;BRANCH IF NO
10303  030070  005737  030744                         TST EMSDP               ;IF SRC IS ZERO AND NEG TREAT IT AS POSITIVE
10304  030074  001403                                 BEQ 2$
10305  030076  012737  177777  025160                 MOV #177777,ES1         ;SET NEGATIVE FLAG
10306  030104  005737  026424          2$:            TST ENULL               ;WAS RESULT STORED ZERO
10307  030110  001004                                 BNE 3$                  ;NO
10308  030112  052777  000004  167326                 BIS #4,@EOPSW           ;SET Z BIT
10309  030120  000406                                 BR 6$                   ;SKIP SETTING OF N BIT
10310  030122  005737  025160          3$:            TST ES1                 ;SIGN OF RESULT
10311  030126  001403                                 BEQ 6$                  ;POSITIVE
10312  030130  052777  000010  167310                 BIS #10,@EOPSW          ;SET N BIT
10313  030136  013737  025160  025170          6$:    MOV ES1,ERSNEG          ;SETUP SIGN OF RESULT
10314  030144  013701  017454                         MOV E2,R1               ;POSITION OF SIGN
10315  030150  013737  017454  025236                 MOV E2,ELSD
10316  030156  013700  017456                         MOV E3,R0               ;START ADDRESS OF DEST.
10317  030162  004737  023016                         JSR PC,EPUDTZ           ;INSERT SIGN IN DST STRING
10318  030166  005737  025170                         TST ERSNEG              ;WAS SIGN STORED POSTITIVE?(UNSIGNED)
```

```
10319  030172  001003                          BNE 4$                  ;BRANCH IF NO
10320  030174  042777  000010  167244          BIC #10,@EOPSW          ;CLEAR PSW N BIT
10321  030202  023737  030744  026424    4$:   CMP EMSDP,ENULL         ;CAN DEST. CONTAIN ALL DIGITS
10322  030210  101403                          BLOS 5$                 ;YES
10323  030212  052777  000002  167226          BIS #2,@EOPSW           ;SET V BIT
10324  030220  013702  017444            5$:   MOV EORSTK,R2           ;SAVE REGISTERS
10325  030224  005022                          CLR (R2)+               ;R0 = 0
10326  030226  005022                          CLR (R2)+               ;R1 = 0
10327  030230  013722  017454                  MOV E2,(R2)+            ;R2 = R2
10328  030234  013722  017456                  MOV E3,(R2)+            ;R3 = R3
10329  030240  013722  017460                  MOV E4,(R2)+            ;R4 = R4
10330  030244  013722  017462                  MOV E5,(R2)+            ;R5 = R5
10331  030250  000207                          RTS PC
```

```
10333
10334  030252  005037  026440          ECVTNP:  .SBTTL CONVERT ZONED TO PACKED
10335  030256  005037  026430                   CLR EVTSSV      ;RESET PASS COUNTER
10336  030262  005037  026424                   CLR EPAK        ;MODE = ZONED
10337  030266  005077  167154                   CLR ENULL       ;RESET NULL INDICATOR
10338  030272  013737  017450  025176           CLR @EOPSW      ;RESET EMULATE PSW
10339  030300  013737  017454  025200           MOV E0,EDCOPA   ;START POSITION OF SOURCE
10340  030306  005037  025220                   MOV E2,EDCOPB   ;START POSITION OF DEST.
10341  030312  032737  000001  017454           CLR EODD        ;IS DEST. ODD OR EVEN # OF DIGITS.
10342  030320  001403                           BIT #1,E2
10343  030322  012737  177777  025220           BEQ EZP1        ;ITS EVEN
10344  030330  004737  030662          EZP1:    MOV #177777,EODD ;ITS ODD
10345  030334  005002                           JSR PC,EFMSD    ;FIND POSITION OF MOST SIGNIFICANT SOURCE DIGIT
10346  030336  105337  025176                   CLR R2
10347  030342  100414                           DECB EDCOPA     ;END OF SOURCE YET
10348  030344  042777  000001  167074           BMI 1$
10349  030352  013700  017452                   BIC #1,@EOPSW   ;RESET END OF SOURCE FLAG
10350  030356  013701  025176                   MOV E1,R0       ;START ADDRESS OF SOURCE
10351  030362  013737  017450  025236           MOV EDCOPA,R1   ;POSITION OF DIGIT
10352  030370  004737  021702                   MOV E0,ELSD
10353  030374  105337  025200           1$:     JSR PC,EFNDTZ   ;GRAB DIGIT
10354  030400  100421                           DECB EDCOPB     ;END OF DEST. YET
10355  030402  005237  026440                   BMI EZPE        ;YES
10356  030406  005702                           INC EVTSSV      ;PASS COUNTER
10357  030410  001403                           TST R2          ;IS DIGIT ZERO
10358  030412  013737  026440  026424           BEQ 2$
10359  030420  013700  017456           2$:     MOV EVTSSV,ENULL ;SAVE POSITION OF LAST NON ZERO DIGIT STORED.
10360  030424  013701  025200                   MOV E3,R0       ;START ADDRESS OF DEST.
10361  030430  013737  017454  025236           MOV EDCOPB,R1   ;POSITION OF DIGIT
10362  030436  004737  022562                   MOV E2,ELSD
10363  030442  000732                           JSR PC,EPUTDT   ;SAVE DIGIT
10364  030444  013700  017452          EZPE:    BR EZP1         ;LOOP TILL COMPLETE
10365  030450  013701  017450                   MOV E1,R0       ;START ADDRESS OF SOURCE
10366  030454  013737  017450  025236           MOV E0,R1       ;POSITION OF SIGN
10367  030462  004737  021702                   MOV E0,ELSD
10368  030466  005037  025160                   JSR PC,EFNDTZ
10369  030472  005737  025170                   CLR ES1         ;RESET SIGN FLAG
10370  030476  001406                           TST ERSNEG      ;IS SOURCE NEG?
10371  030500  005737  030744                   BEQ 2$          ;NO
10372  030504  001403                           TST EMSDP       ;IF SOURCE IS ZERO AND NEG TREAT IT AS POSITIVE
10373  030506  012737  177777  025160           BEQ 2$
10374  030514  005737  026424           2$:     MOV #177777,ES1 ;SET NEGATIVE FLAG
10375  030520  001004                           TST ENULL       ;WAS RESULT STORED ZERO
10376  030522  052777  000004  166716           BNE 3$          ;NO
10377  030530  000406                           BIS #4,@EOPSW   ;SET Z BIT
10378  030532  005737  025160           3$:     BR 4$
10379  030536  001403                           TST ES1         ;SET SIGN OF RESULT
10380  030540  052777  000010  166700           BEQ 4$          ;POSITIVE
10381  030546  023737  030744  026424           BIS #10,@EOPSW  ;SET N BIT
10382  030554  101403                   4$:     CMP EMSDP,ENULL ;CAN DEST. CONTAIN ALL DIGITS
10383  030556  052777  000002  166662           BLOS 5$         ;YES
10384  030564  013701  017454                   BIS #2,@EOPSW   ;SET V BIT
10385  030570  013700  017456           5$:     MOV E2,R1       ;POSITION OF SIGN
10386  030574  013737  025160  025170           MOV E3,R0       ;START ADDRESS OF NUMBER
                                                MOV ES1,ERSNEG
```

```
10387  030602  013737  017454  025236                  MOV E2,ELSD
10388  030610  004737  022562                          JSR PC,EPUTDT          ;SAVE SIGN
10389  030614  005737  025170                          TST ERSNEG             ;WAS SIGN STORED POSITIVE? (UNSIGNED)
10390  030620  001003                                  BNE 1$                 ;BRANCH IF NO
10391  030622  042777  000010  166616                  BIC #10,@EOPSW         ;CLEAR PSW N BIT
10392  030630  013702  017444                  1$:     MOV EORSTK,R2          ;SAVE REGISTERS
10393  030634  005022                                  CLR (R2)+              ;R0 = 0
10394  030636  005022                                  CLR (R2)+              ;R1 = 0
10395  030640  013722  017454                          MOV E2,(R2)+           ;R2 = R2
10396  030644  013722  017456                          MOV E3,(R2)+           ;R3 = R3
10397  030650  013722  017460                          MOV E4,(R2)+           ;R4 = R4
10398  030654  013722  017462                          MOV E5,(R2)+           ;R5 = R5
10399  030660  000207                                  RTS PC
```

```
10401  030662  005037  030746          EFMSD:          CLR ESDC
10402  030666  005037  030744                          CLR EMSDP
10403  030672  013700  017452                          MOV E1,R0               ;SET R0=SRC.ADR
10404  030676  013701  017450                          MOV E0,R1               ;SET R1=SRC.PTR
10405  030702  013737  017450  025236                  MOV E0,ELSD
10406  030710  005301                          1$:     DEC R1
10407  030712  105701                                  TSTB R1                 ;LOOKED AT ALL SRC DIGITS YET?
10408  030714  100412                                  BMI 2$                  ;BRANCH IF YES
10409  030716  004737  021456                          JSR PC,ESNK             ;GET NEXT SRC DIGIT
10410  030722  005237  030746                          INC ESDC                ;INCREMENT DIGIT COUNTER
10411  030726  005702                                  TST R2                  ;IS DIGIT ZERO (NON-SIGNIFICANT)
10412  030730  001767                                  BEQ 1$                  ;BRANCH IF YES
10413  030732  013737  030746  030744                  MOV ESDC,EMSDP          ;SAVE POSITION OF DIGIT
10414  030740  000763                                  BR 1$
10415  030742  000207                          2$:     RTS PC
10416
10417  030744  000000          EMSDP:          .WORD 0
10418  030746  000000          ESDC:           .WORD 0
```

```
10420                                                   .SBTTL  ASHP,ASHN INSTRUCTIONS
10421  030750  012737  177777  026430  EASHP:          MOV #177777,EPAK        ;INDICATE PACKED MODE
10422  030756  005037  032244                          CLR EODDS
10423  030762  005037  032246                          CLR EODDD
10424  030766  032737  000001  017450                  BIT #1,E0               ;IS SRC  ODD LENGTH?
10425  030774  001403                                  BEQ 1$
10426  030776  012737  177777  032244                  MOV #177777,EODDS       ;YES - SET ODD INDICATOR
10427  031004  032737  000001  017454          1$:     BIT #1,E2               ;IS DST ODD IN LENGTH?
10428  031012  001406                                  BEQ EASH
10429  031014  012737  177777  032246                  MOV #177777,EODDD       ;YES-SET ODD INDICATOR
10430  031022  000402                                  BR EASH
10431  031024  005037  026430          EASHN:          CLR EPAK                ;INDICATE ZONE MODE
10432  031030  005037  032252          EASH:           CLR ENCC                ;INIT. N CLEAR INDICATOR
10433  031034  005037  032254                          CLR ENZI                ;INIT. NON ZERO INDICATOR
10434  031040  005037  032256                          CLR ETNZI
10435  031044  005037  025174                          CLR ECARRY              ;INIT. CARRY INDICATOR
10436  031050  013703  017450                          MOV E0,R3               ;INIT. SCR.PTR TO SRC.LEN-1
10437  031054  105303                                  DECB R3
10438  031056  005737  026430                          TST EPAK                ;ZONED STRING?
10439  031062  001003                                  BNE 2$                  ;BRANCH IF NO
10440  031064  012704  040237                          MOV #40237,R4           ;MAKE RESULT DATA TYPE = TRAILING SEPARATE
10441  031070  000406                                  BR 3$
10442  031072  013704  017454          2$:             MOV E2,R4               ;INITIALIZE RESULT PTR TO 127+31+1(MAX SHIFT CT+
10443  031076  042704  000377                          BIC #377,R4
10444  031102  052704  000237                          BIS #237,R4
10445  031106  010437  033204          3$:             MOV R4,ETLSD
10446  031112  105304                                  DECB R4
10447  031114  113705  017460                          MOVB E4,R5              ;INITIALIZE SHIFT # TO SHIFT COUNT
10448  031120  100424                                  BMI EASHR               ;SHIFT COUNT?
10449  031122  005705                          1$:     TST R5                  ;POSITIVE OR ZERO - SHIFT IN DIRECTION OF
10450                                                                          ;    LEAST TO MOST-SIGNIFICANT DIGITS
10451  031124  003476                                  BLE ESISRC              ;IS SHIFT # <=0?
10452  031126  122704  000377                          CMPB #377,R4            ;SHIFT #>0; IS RESULT.PTR=0?
10453  031132  001555                                  BEQ EDETSN              ;IF RESULT.PTR<0 BRANCH TO COPY RESULT INTO DST.
10454  031134  012700  026164                          MOV #EVRTAB,R0          ;RESULT.PTR DOES NOT=0. PUSH A ZERO
10455  031140  010401                                  MOV R4,R1               ;    DIGIT INTO THE DESTINATION.
10456  031142  013737  033204  025236                  MOV ETLSD,ELSD
10457  031150  005002                                  CLR R2
10458  031152  012737  177777  025220                  MOV #177777,EODD        ;SET R0=RESULT.ADR, R1=RESULT.PTR, R2=0
10459  031160  004737  022540                          JSR PC,EPUSH            ;CALL ROUTINE TO PUSH THE 0 DIGIT INTO RESULT.
10460  031164  105304                                  DECB R4
10461  031166  005305                                  DEC R5
10462  031170  000754                                  BR  1$
10463
10464  031172                          EASHR:
10465  031172  042703  177400                          BIC #177400,R3          ;SHIFT COUNT IS NEGATIVE
10466  031176  113700  017460                          MOVB E4,R0              ;GET SHIFT COUNT
10467  031202  060003                                  ADD R0,R3               ;ADD SHIFT COUNT (NEGATIVE) TO SRC.PTR
10468  031204  042703  177400                          BIC #177400,R3
10469  031210  013700  017450                          MOV E0,R0
10470  031214  042700  000377                          BIC #377,R0
10471  031220  060003                                  ADD R0,R3
10472  031222  122703  000177                          CMPB #177,R3            ;CHECK FOR SPECIAL CASE WHEN SRC.LEN=0 AND
10473                                                                          ;  SHIFT CNT=-128(200).
```

```
10474  031226  001515                          BEQ EFILZ               ;BRANCH IF THIS IS THE SPECIAL CASE.
10475  031230  105703                          TSTB R3
10476  031232  100003                          BPL 2$                  ;BRANCH IF SRC.PTR IS POSITIVE
10477  031234  122703  177777                  CMPB #-1,R3
10478  031240  001110                          BNE EFILZ               ;IF SRC PTR IS <-1 FILL DST WITH ZERO
10479  031242  013700  017452          2$:     MOV E1,R0               ;FIND MOST SIGNIFICANT DIGIT TO BE
10480  031246  010301                          MOV R3,R1               ;     SHIFTED OUT
10481  031250  013737  017450  025236          MOV E0,ELSD
10482  031256  105201                          INCB R1                 ;SET R0=SRC.ADR,R1=SRC.PTR+1
10483  031260  013737  032244  025220          MOV EODDS,EODD
10484  031266  004737  021456                  JSR PC,ESNK             ;CALL ROUTINE TO FIND DIGIT
10485  031272  113700  017461                  MOVB E4+1,R0
10486  031276  060002                          ADD R0,R2               ;ADD RND.DGT TO DIGIT FOUND IN R2
10487  031300  022702  000012                  CMP #12,R2              ;IS RESULT LESS THAN 10
10488  031304  101004                          BHI 1$
10489  031306  012737  000001  025174          MOV #1,ECARRY           ;NO-SET CARRY
10490  031314  000402                          BR ESISRC
10491  031316  005037  025174          1$:     CLR ECARRY
10492
10493  031322                          ESISRC:                         ;SHIFT SRC DIGITS INTO DST.
10494  031322  122704  000377                  CMPB #377,R4            ;IS RESULT.PTR <0?
10495  031326  001457                          BEQ EDETSN              ;YES - BRANCH TO COPY RESULT INTO DEST
10496  031330  105703                          TSTB R3                 ;NO - IS SRC.PTR <0?
10497  031332  100453                          BMI EFILZ
10498  031334  013700  017452                  MOV E1,R0               ;NO - FIND SRC DIGIT TO SHIFT INTO RESULT
10499  031340  010301                          MOV R3,R1               ;SET R0=SRC.ADR, R1=SRC.PTR
10500  031342  013737  017450  025236          MOV E0,ELSD
10501  031350  013737  032244  025220          MOV EODDS,EODD
10502  031356  004737  021456                  JSR PC,ESNK             ;CALL ROUTINE TO FIND SRC DIGIT
10503  031362  063702  025174                  ADD ECARRY,R2           ;ADD CARRY TO DIGIT FOUND
10504  031366  022702  000011                  CMP #11,R2              ;DIGIT OVERFLOW?
10505  031372  103005                          BHIS    2$              ;IF NO BRANCH
10506  031374  005002                          CLR R2                  ;OVERFLOW - SET CARRY & SET DIGIT=0
10507  031376  012737  000001  025174          MOV #1,ECARRY
10508  031404  000402                          BR 3$
10509  031406  005037  025174          2$:     CLR ECARRY
10510  031412  012700  026164          3$:     MOV #EVRTAB,R0          ;PUSH DIGIT FOUND INTO RESULT.
10511  031416  010401                          MOV R4,R1               ;SET R0=RESULT.ADR, R1=RESULT.PTR, R2 CONTAINS D
10512  031420  013737  033204  025236          MOV ETLSD,ELSD
10513  031426  012737  177777  025220          MOV #177777,EODD
10514  031434  004737  022540                  JSR PC,EPUSH            ;CALL ROUTINE TO PUSH DIGIT INTO RESULT
10515  031440  042702  177760                  BIC #177760,R2          ;MASK OFF ALL BUT DIGIT PUSHED
10516  031444  001403                          BEQ 1$                  ;IS DIGIT PUSHED=0?
10517  031446  012737  177777  032256          MOV #177777,ETNZI       ;NO-SET NON ZERO INDICATOR
10518  031454  105303                  1$:     DECB R3                 ;DECREMENT SRC.PTR
10519  031456  105304                          DECB R4                 ;DECREMENT RESULT.PTR
10520  031460  000720                          BR ESISRC
10521
10522  031462  000137  032260          EFILZ:  JMP EFILLZ
10523  031466                          EDETSN:                         ;DETERMINE SIGN & STORE WITH RESULT
10524                                                                  ;NOTE: THERE EXIST TWO CASES IN WHICH THE DST SIGN
10525                                                                  ;  WILL DIFFER FROM THE SRC SIGN. THESE CASES ARE
10526                                                                  ;  WHEN:
10527                                                                  ;  1)SRC SIGN = -,SHIFT=RIGHT,AND RESULT(ETNZI)=0
```

```
10528
10529  031466  013700  017452                        ;  2)SRC SIGN = -,SHIFT=LEFT,AND SRC MAGNITUDE=0
10530  031472  013701  017450                        MOV E1,R0          ;SETUP SRC ADR
10531  031476  013737  017450  025236                MOV E0,R1          ;SETUP PTR TO SIGN
10532  031504  013737  032244  025220                MOV E0,ELSD        ;SETUP PTR TO LEAST SIGN DIGIT
10533  031512  004737  021456                        MOV EODDS,EODD
10534                                                 JSR PC,ESNK        ;CALL ROUTINE TO FIND SRC SIGN
10535  031516  005737  032256                        ;SIGN RETURNED IN ERSNEG
10536  031522  001035                                TST ETNZI          ;NON ZERO INDICATOR SET?
10537  031524  032737  000200  017460                BNE 1$             ;BRANCH IF YES
10538  031532  001403                                BIT #200,E4        ;SHIFT RIGHT?
10539  031534  005037  025170                        BEQ 2$             ;NO
10540  031540  000426                                CLR ERSNEG         ;MAKE SIGN POSITIVE (CASE 1 NOTED ABOVE)
10541  031542  105737  017450                        BR 1$
10542  031546  001421                        2$:     TSTB E0            ;SRC MAGNITUDE = 0
10543  031550  013700  017452                        BEQ 4$             ;BRANCH IF YES (SRC.LEN = 0)
10544  031554  013701  017450                        MOV E1,R0          ;SETUP SRC.ADR
10545  031560  013737  017450  025236                MOV E0,R1          ;SETUP PTR TO SIGN
10546  031566  105301                        3$:     MOV E0,ELSD        ;SETUP PTR TO LEAST SIGN DIGIT
10547  031570  013737  032244  025220                DECB R1
10548  031576  004737  021456                        MOV EODDS,EODD     ;FIND SRC DIGIT
10549  031602  005702                                JSR PC,ESNK
10550  031604  001004                                TST R2             ;IS DIGIT = 0?
10551  031606  105701                                BNE 1$             ;BRANCH IF NO
10552  031610  001366                                TSTB R1            ;ALL DIGITS IN SRC TESTED?
10553  031612  005037  025170                        BNE 3$             ;BRANCH IF NO
10554  031616                          4$:     1$:     CLR ERSNEG         ;CASE 2 NOTED ABOVE
10555  031616  012700  026164                                           ;STORE SIGN WITH RESULT
10556  031622  013701  033204                        MOV #EVRTAB,R0
10557  031626  013737  033204  025236                MOV ETLSD,R1
10558  031634  012737  177777  025220                MOV ETLSD,ELSD
10559  031642  004737  022540                        MOV #177777,EODD
10560                                                 JSR PC,EPUSH
10561  031646
10562  031646  005037  032254                ECRID:
10563  031652  113701  017454                        CLR ENZI           ;COPY RESULT INTO DESTINATION
10564  031656  005737  026430                        MOVB E2,R1         ;CLEAR NON ZERO INDICATOR
10565  031662  001405                                TST EPAK           ;  OF RESULT TO COPY.
10566  031664  012704  026304                        BEQ 1$             ;PACKED INST?
10567  031670  006201                                MOV #EVRTAB+120,R4 ;BRANCH IF NO
10568  031672  005201                                ASR R1             ;CALCULATE # OF BYTES OCCUPIED BY DST
10569  031674  000402                                INC R1             ;   # OF BYTES=# OF DIGITS/2 +1
10570  031676  012704  026423                        BR 4$
10571  031702  160104                        1$:     MOV #EVRTAB+237,R4
10572  031704  013701  017454                4$:     SUB R1,R4
10573  031710  042701  000377                        MOV E2,R1          ;SETUP POSITION POINTER TO ZERO
10574  031714  010103                                BIC #377,R1
10575  031716  010400                                MOV R1,R3          ;SAVE DATA TYPE FIELD
10576  031720  013737  017454  025236        2$:     MOV R4,R0          ;SETUP 'FROM'' ADDRESS
10577  031726  013737  032246  025220                MOV E2,ELSD        ;SETUP POINTER TO LEAST SIGN DIGIT
10578  031734  005737  026430                        MOV EODDD,EODD
10579  031740  001007                                TST EPAK           ;ZONED RESULT?
10580  031742  042701  177400                        BNE 5$             ;BRANCH IN NO
10581  031746  052701  040000                        BIC #177400,R1     ;ZONED RESULT DATA TYPE = TRAILING SEPARATE
                                                      BIS #40000,R1
```

```
10582  031752  112737  000100  025237          MOVB #100,ELSD+1
10583  031760  004737  021456          5$:     JSR PC,ESNK             ;CALL ROUTINE TO GET RESULT DIGIT
10584  031764  013700  017456                  MOV E3,R0               ;SETUP 'TO' ADDRESS (I.E. DST)
10585  031770  105037  025237                  CLRB ELSD+1
10586  031774  050337  025236                  BIS R3,ELSD
10587  032000  042701  177400                  BIC #177400,R1
10588  032004  050301                          BIS R3,R1
10589  032006  004737  022540                  JSR PC,EPUSH            ;CALL ROUTINE TO PUSH RESULT DIGIT INTO DST
10590  032012  005702                          TST R2                  ;WAS DIGIT PUSHED NON ZERO?
10591  032014  001403                          BEQ 3$                  ;BRANCH IF NO
10592  032016  012737  177777  032254          MOV #177777,ENZI        ;SET NON ZERO INDICATOR
10593  032024  020137  017454          3$:     CMP R1,E2               ;COPY DONE?
10594  032030  001402                          BEQ ESCC                ;BRANCH IF YES
10595  032032  005201                          INC R1                  ;UPDATE PTR AND RETURN TO COPY NXT DIGIT
10596  032034  000730                          BR 2$
10597
10598  032036                  ESCC:                                   ;SET CONDITION CODES
10599  032036  005077  165404                  CLR @EOPSW              ;RESET EMULATION PSW
10600  032042  005737  032254                  TST ENZI                ;SET Z BIT IF NON ZERO INDICATOR=0.
10601  032046  001004                          BNE 1$
10602  032050  052777  000004  165370          BIS #4,@EOPSW
10603  032056  000406                          BR 2$
10604  032060  005737  025170          1$:     TST ERSNEG              ;IS SIGN NEGATIVE?
10605  032064  001403                          BEQ 2$                  ;BRANCH IF NO
10606  032066  052777  000010  165352          BIS #10,@EOPSW          ;SET N BIT
10607  032074                          2$:                             ;DETERMINE V BIT
10608  032074  113700  017454                  MOVB E2,R0              ;CALCULATE # OF DIGITS OF RESULT
10609  032100  012704  000237                  MOV #237,R4             ;  THAT WOULD NOT FIT IN DEST.
10610  032104  160004                          SUB R0,R4
10611  032106  001437                          BEQ 6$
10612  032110  005304                          DEC R4
10613  032112  012700  026164                  MOV #EVRTAB,R0          ;YES - WERE ANY SIGNIFICANT DIGITS
10614  032116  013701  017454                  MOV E2,R1               ;    NOT STORED?
10615  032122  042701  000377                  BIC #377,R1
10616  032126  005737  026430                  TST EPAK                ;ZONED RESULT?
10617  032132  001004                          BNE 3$                  ;BRANCH IF NO
10618  032134  042701  177400                  BIC #177400,R1          ;ZONED RESULT DATA TYPE =TRAILING SEPARATE
10619  032140  052701  040000                  BIS #40000,R1
10620  032144  012737  177777  025220  3$:     MOV #177777,EODD
10621  032152  013737  033204  025236          MOV ETLSD,ELSD
10622  032160  004737  021456          5$:     JSR PC,ESNK             ;    CALL ROUTINE TO FIND RESULT DIGIT
10623  032164  005702                          TST R2                  ;    NOT STORED.
10624  032166  001004                          BNE 4$                  ;GO SET OVERFLOW - V BIT
10625  032170  120104                          CMPB R1,R4
10626  032172  001405                          BEQ 6$
10627  032174  005201                          INC R1
10628  032176  000770                          BR 5$
10629  032200  052777  000002  165240  4$:     BIS #2,@EOPSW           ;SET V BIT
10630  032206  013702  017444          6$:     MOV EORSTK,R2           ;REGISTER UNLOAD
10631  032212  005022                          CLR (R2)+               ;R0=0
10632  032214  005022                          CLR (R2)+               ;R1=0
10633  032216  013722  017454                  MOV E2,(R2)+            ;R2=R2
10634  032222  013722  017456                  MOV E3,(R2)+            ;R3=R3
10635  032226  005022                          CLR (R2)+               ;R4=0
```

```
10636  032230  013722  017462                      MOV E5,(R2)+          ;R5=R5
10637  032234  000207                              RTS PC
10638
10639  032236  000000                  ETMPR0:     .WORD 0
10640  032240  000000                  ETMPR1:     .WORD 0
10641  032242  000000                  ETMPR2:     .WORD 0
10642  032244  000000                  EODDS:      .WORD 0
10643  032246  000000                  EODDD:      .WORD 0
10644  032250  000000                  ESGN:       .WORD 0
10645  032252  000000                  ENCC:       .WORD 0
10646  032254  000000                  ENZI:       .WORD 0
10647  032256  000000                  ETNZI:      .WORD 0
10648
10649  032260                          EFILLZ:                           ;PAD REMAINING RESULT WITH ZERO DIGITS
10650  032260  122704  000377                      CMPB #377,R4          ;IS RESULT.PTR <0?
10651  032264  001426                              BEQ 1$                ;IF YES BRANCH
10652  032266  012700  026164                      MOV #EVRTAB,R0        ;PUSH A ZERO DIGIT INTO RESULT.
10653  032272  010401                              MOV R4,R1             ;SET R0=RESULT.ADR, R1-RESULT.PTR, R2=0
10654  032274  013702  025174                      MOV ECARRY,R2
10655  032300  013737  033204  025236              MOV ETLSD,ELSD
10656  032306  012737  177777  025220              MOV #177777,EODD
10657  032314  004737  022540                      JSR PC,EPUSH          ;CALL ROUTINE TO PUSH ZERO + CARRY
10658                                                                     ;    DIGIT INTO RESULT.
10659  032320  005702                              TST R2                ;WAS DIGIT PUSHED = 0?
10660  032322  001403                              BEQ 2$                ;BRANCH IF YES
10661  032324  012737  177777  032256              MOV #177777,ETNZI     ;DIGIT PUSHED NOT = 0;SET NONZERO INDICATOR
10662  032332  105304                      2$:     DECB R4
10663  032334  005037  025174                      CLR ECARRY
10664  032340  000747                              BR EFILLZ
10665  032342  000137  031466                  1$: JMP EDETSN
```

```
10667
10668  032346  012737  177777  026430  ECMPP:      .SBTTL  CMPP,CMPN INSTRUCTIONS
10669  032354  005037  033174                      MOV #177777,EPAK      ;INDICATE PACKED MODE
10670  032360  005037  033176                      CLR EODDS1
10671  032364  032737  000001  017450              CLR EODDS2
10672  032372  001403                              BIT #1,E0             ;IS SRC NUMBER ODD LENGTH?
10673  032374  012737  177777  033174              BEQ 1$
10674  032402  032737  000001  017454      1$:     MOV #177777,EODDS1    ;YES - SET ODD INDICATOR
10675  032410  001406                              BIT #1,E2             ;IS SRC2 ODD LENGTH?
10676  032412  012737  177777  033176              BEQ ECMP
10677  032420  000402                              MOV #177777,EODDS2    ;YES SET ODD INDICATOR
10678  032422  005037  026430          ECMPN:      BR ECMP
10679                                              CLR EPAK              ;INDICATE ZONED MODE
10680  032426  013703  017450          ECMP:       MOV E0,R3             ;INITIALIZE SRC.PTY TO 0
10681  032432  042703  000377                      BIC #377,R3
10682  032436  013704  017454                      MOV E2,R4             ;INITIALIZE DST.PTR TO 0
10683  032442  042704  000377                      BIC #377,R4
10684  032446  010337  033200                      MOV R3,ELS1M
10685  032452  010437  033202                      MOV R4,ELS2M
10686  032456  013700  017452              1$:     MOV E1,R0             ;FIND MOST SIGNIFICANT DIGIT IN SRC1
10687  032462  010301                              MOV R3,R1             ;SET R0=SRC1.ADR, R1=SRC1.PTR
10688  032464  120337  017450                      CMPB R3,E0            ;REACH END OF SRC1 STRING?
10689  032470  001416                              BEQ 2$                ;IF YES BRANCH
10690  032472  013737  017450  025236              MOV E0,ELSD
10691  032500  013737  033174  025220              MOV EODDS1,EODD
10692  032506  004737  021456                      JSR PC,ESNK           ;CALL ROUTINE TO FIND SRC DIGIT
10693  032512  005702                              TST R2                ;IS SRC1 DIGIT=0?
10694  032514  001004                              BNE 2$                ;IF NO BRANCH
10695  032516  005203                              INC R3                ;UPDATE SRC1.PTR TO NEXT DIGIT
10696  032520  010337  033200                      MOV R3,ELS1M          ;SAVE SRC1.PTR
10697  032524  000754                              BR 1$
10698  032526  013705  017450              2$:     MOV E0,R5
10699  032532  160305                              SUB R3,R5             ;CALCULATE # OF SIGN DIGITS IN SRC1
10700  032534  010537  033170                      MOV R5,ES1NSD         ;SAVE # OF SIGN DIGITS IN ES1NSD
10701  032540  013700  017456              3$:     MOV E3,R0             ;FIND MOST SIGNIFICANT DIGIT IN SRC2
10702  032544  010401                              MOV R4,R1             ;SET R0=SRC2.ADR, R1=SRC2.PTR
10703  032546  120437  017454                      CMPB R4,E2            ;REACH END OF SRC2 STRING?
10704  032552  001416                              BEQ 4$                ;IF YES BRANCH
10705  032554  013737  017454  025236              MOV E2,ELSD
10706  032562  013737  033176  025220              MOV EODDS2,EODD
10707  032570  004737  021456                      JSR PC,ESNK           ;CALL ROUTINE TO FIND SRC DIGIT
10708  032574  005702                              TST R2                ;IS SRC2 DIGIT=0
10709  032576  001004                              BNE 4$                ;IF NO BRANCH
10710  032600  005204                              INC R4                ;UPDATE SRC2.PTR TO NEXT DIGIT
10711  032602  010437  033202                      MOV R4,ELS2M          ;SAVE SRC2.PTR
10712  032606  000754                              BR 3$
10713  032610  013705  017454              4$:     MOV E2,R5
10714  032614  160405                              SUB R4,R5             ;CALCULATE # OF SIGN DIGITS IN SRC2
10715  032616  010537  033172                      MOV R5,ES2NSD         ;SAVE # OF SIGN DIGITS IN ES2NSD
10716
10717  032622                          ECNSD:                            ;COMPARE # OF SIGN DIGITS IN SRC1
10718  032622  005077  164620                      CLR @EOPSW            ;     VERSUS SRC2
10719  032626  023737  033170  033172              CMP ES1NSD,ES2NSD
10720  032634  101052                              BHI 5$                ;BRANCH IF SRC1 HAS MORE SIGN DIGITS
```

```
10721  032636  103457                          BLO 6$                  ;BRANCH IF SRC2 HAS MORE SIGN DIGITS
10722  032640  005737  033170                  TST ES1NSD                      ;SRC1 & SRC2 CONTAIN THE SAME #
10723                                          ;       OF SIGNIFICANT DIGITS
10724  032644  001500                          BEQ 3$                  ;BOTH SRC'S CONTAIN NO SIGNIFICANT DIGITS
10725  032646  013703  033200                  MOV ELS1M,R3            ;SETUP SRC1.PTR
10726  032652  013704  033202                  MOV ELS2M,R4            ;SETUP SRC2.PTR
10727  032656  013700  017452          4$:     MOV E1,R0               ;GET A SRC1 DIGIT
10728  032662  010301                          MOV R3,R1
10729  032664  013737  017450  025236          MOV E0,ELSD
10730  032672  013737  033174  025220          MOV EODDS1,EODD
10731  032700  004737  021456                  JSR PC,ESNK
10732  032704  010237  033166                  MOV R2,ES1D             ;SAVE SRC1 DIGIT
10733  032710  013700  017456                  MOV E3,R0               ;GET A SRC2 DIGIT
10734  032714  010401                          MOV R4,R1
10735  032716  013737  017454  025236          MOV E2,ELSD
10736  032724  013737  033176  025220          MOV EODDS2,EODD
10737  032732  004737  021456                  JSR PC,ESNK
10738  032736  023702  033166                  CMP ES1D,R2             ;COMPARE DIGITS
10739  032742  101007                          BHI 5$                  ;BRANCH IF SRC1 DIGIT IS BIGGER
10740  032744  103414                          BLO 6$                  ;BRANCH IF SRC2 DIGIT IS BIGGER
10741  032746  005203                          INC R3                  ;DIGITS EQUAL - ALL DIGITS CHECKED?
10742  032750  120337  017450                  CMPB R3,E0              ;                               ;;REV-C
10743  032754  001416                          BEQ 7$                  ;BRANCH IF ALL CHECKED - I.E. ALL
10744                                          ;       DIGITS ARE EQUAL
10745  032756  005204                          INC R4
10746  032760  000736                          BR 4$
10747  032762  004737  033102          5$:     JSR PC,EGS1S            ;CHECK SIGN OF SRC1
10748  032766  005737  025170                  TST ERSNEG              ;IS SRC1 NEG?
10749  032772  001021                          BNE 2$                  ;BRANCH IF YES
10750  032774  000427                          BR 1$                   ;SRC1 IS POSITIVE
10751
10752  032776  004737  033134          6$:     JSR PC,EGS2S            ;CHECK SIGN OF SRC2
10753  033002  005737  025170                  TST ERSNEG              ;IS SRC2 NEGATIVE?
10754  033006  001022                          BNE 1$                  ;BRANCH IF YES
10755  033010  000412                          BR 2$                   ;SRC2 IS POSITIVE
10756
10757  033012                          7$:                             ;COMPARE SIGNS
10758  033012  004737  033102                  JSR PC,EGS1S            ;GET SRC1 SIGN
10759  033016  013705  025170                  MOV ERSNEG,R5           ;SAVE IT IN R5
10760  033022  004737  033134                  JSR PC,EGS2S            ;GET SRC2 SIGN
10761  033026  023705  025170                  CMP ERSNEG,R5           ;SIGNS =?
10762  033032  001405                          BEQ 3$                  ;BRANCH IF YES
10763  033034  000752                          BR 5$                   ;SIGNS NOT EQUAL
10764
10765  033036  052777  000010  164402  2$:     BIS #10,@EOPSW          ;SRC2>SRC1 SET N BIT.
10766  033044  000403                          BR 1$
10767  033046  052777  000004  164372  3$:     BIS #4,@EOPSW           ;SRC2=SRC1 SET Z BIT
10768  033054  013702  017444          1$:     MOV EORSTK,R2           ;REGISTER UNLOAD
10769  033060  005022                          CLR (R2)+               ;R0=0
10770  033062  005022                          CLR (R2)+               ;R1=0
10771  033064  005022                          CLR (R2)+               ;R2=0
10772  033066  005022                          CLR (R2)+               ;R3=0
10773  033070  013722  017460                  MOV E4,(R2)+            ;R4=R4
10774  033074  013722  017462                  MOV E5,(R2)+            ;R5=R5
```

```
10775  033100  000207                          RTS PC
10776
10777  033102  013700  017452          EGS1S:  MOV E1,R0              ;ROUTINE TO GET SRC1 SIGN
10778  033106  013701  017450                  MOV E0,R1              ;SET R0=SRC1.ADR,R1=SRC1.PTR
10779  033112  013737  017450  025236          MOV E0,ELSD
10780  033120  013737  033174  025220          MOV EODDS1,EODD
10781  033126  004737  021456                  JSR PC,ESNK            ;CALL ROUTINE TO FIND SRC1 SIGN
10782  033132  000207                          RTS PC
10783
10784  033134  013700  017456          EGS2S:  MOV E3,R0              ;ROUTINE TO GET SRC2 SIGN
10785  033140  013701  017454                  MOV E2,R1              ;SET R0=SRC2.ADR,R1=SRC2.PTR
10786  033144  013737  017454  025236          MOV E2,ELSD
10787  033152  013737  033176  025220          MOV EODDS2,EODD
10788  033160  004737  021456                  JSR PC,ESNK            ;CALL ROUTINE TO FIND SRC2 SIGN
10789  033164  000207                          RTS PC
10790
10791  033166  000000                  ES1D:   .WORD 0
10792  033170  000000                  ES1NSD: .WORD 0
10793  033172  000000                  ES2NSD: .WORD 0
10794  033174  000000                  EODDS1: .WORD 0
10795  033176  000000                  EODDS2: .WORD 0
10796  033200  000000                  ELS1M:  .WORD 0
10797  033202  000000                  ELS2M:  .WORD 0
10798  033204  000000                  ETLSD:  .WORD 0
```

```
10800                                                   .SBTTL          MULP INSTRUCTION
10801
10802  033206  004737  034250          EMULP:          JSR PC,ERSAV    ;SAVE MULP CALL PARAMETERS
10803  033212  005037  035236                          CLR EMVBR       ;INITIALIZE MULP V-BIT RESULT
10804  033216  004737  034332                          JSR PC,EIRT2    ;INITIALIZE TEMPORARY RESULT BUFFER (ERT2) TO 0+
10805  033222  004737  034406                          JSR PC,ETSTS1   ;IS MULP SRC1=0?
10806  033226  032737  000004  034716                  BIT #4,ETOPSW
10807  033234  001147                                  BNE EPMID
10808  033236  004737  034456                          JSR PC,ETSTS2   ;IS MULP SRC2=0?
10809  033242  032737  000004  034716                  BIT #4,ETOPSW
10810  033250  001141                                  BNE EPMID
10811
10812  033252  005037  017454                          CLR E2          ;FORM 1X,2X,3X, ETC TABLE
10813  033256  012737  034660  017456                  MOV #EZDSC,E3   ;  USE ADDP - SRC1=MULT.SRC1
10814  033264  012737  035166  035234                  MOV #EXTBP,EVXTBP;               SRC2=PREVIOUS ADDP DST
10815  033272  012737  035210  035232                  MOV #EXTVB,EVXTVB;               DST=E(N)XT TABLE
10816  033300  013737  034702  017450                  MOV ESR0,E0
10817  033306  013737  034704  017452                  MOV ESR1,E1
10818  033314  012737  000040  017460          1$:     MOV #40,E4
10819  033322  017737  001706  017462                  MOV @EVXTBP,E5
10820  033330  012737  034662  017444                  MOV #ETRSTK,EORSTK
10821  033336  012737  034716  017446                  MOV #ETOPSW,EOPSW
10822  033344  004737  023510                          JSR PC,EADDP
10823  033350  042737  177775  034716                  BIC #177775,ETOPSW  ;CLEAR ALL BUT V BIT FROM ADDP
10824  033356  013777  034716  001646                  MOV ETOPSW,@EVXTVB  ;  RESULT PSW; SAVE V BITS IN TABLE.
10825  033364  027727  001644  034720                  CMP @EVXTBP,#E1XT   ;FIRST TABLE ENTRY FORMATION?
10826  033372  001041                                  BNE 2$              ;BRANCH IF NO
10827  033374  032737  000001  034706                  BIT #1,ESR2         ;WORK ON TABLE ENTRY SIGNS
10828  033402  001404                                  BEQ 31$
10829  033404  012737  177777  025220                  MOV #177777,EODD
10830  033412  000402                                  BR 3$
10831  033414  005037  025220          31$:            CLR EODD
10832  033420  013700  034710          3$:             MOV ESR3,R0
10833  033424  013701  034706                          MOV ESR2,R1
10834  033430  013737  034706  025236                  MOV ESR2,ELSD
10835  033436  004737  021456                          JSR PC,ESNK         ;CALL ROUTINE TO GET MULP.SRC2 SIGN
10836  033442  005737  025170                          TST ERSNEG          ;IF THIS SIGN IS POSITIVE THEN
10837  033446  001413                                  BEQ 2$              ;  LEAVE TABLE SIGNS = MULP.SRC1 SIGN
10838  033450  132737  000001  034740                  BITB #1,E1XT+20     ;MULP.SRC2 SIGN = NEG; MAKE TABLE
10839  033456  001404                                  BEQ 4$              ;  SIGNS = COMPLEMENT OF MULP.SRC1 SIGN
10840  033460  142737  000001  034740                  BICB #1,E1XT+20
10841  033466  000403                                  BR 2$
10842  033470  152737  000001  034740          4$:     BISB #1,E1XT+20
10843  033476  027727  001532  035140          2$:     CMP @EVXTBP,#E9XT   ;ALL TABLE ENTRIES FORMED?
10844  033504  001424                                  BEQ EISP            ;BRANCH IF YES
10845  033506  012737  000040  017450                  MOV #40,E0
10846  033514  012737  034720  017452                  MOV #E1XT,E1
10847  033522  012737  000040  017454                  MOV #40,E2          ;UPDATE ADDP SRC2 TO CURRENT
10848  033530  017737  001500  017456                  MOV @EVXTBP,E3      ;  DST POINTER
10849  033536  062737  000002  035234                  ADD #2,EVXTBP       ;UPDATE TABLE POINTERS
10850  033544  062737  000002  035232                  ADD #2,EVXTVB
10851  033552  000660                                  BR 1$               ;RETURN TO FORM NEXT ENTRY.
10852
10853  033554  000565          EPMID:                  BR EMID
```

```
10854
10855  033556  005037  035162          EISP:   CLR ESPOS               ;INITIALIZE SHIFT POSITION TO ZERO
10856  033562  032737  000001  034706          BIT #1,ESR2
10857  033570  001404                          BEQ 10$
10858  033572  012737  177777  025220          MOV #177777,EODD
10859  033600  000402                          BR 11$
10860  033602  005037  025220          10$:    CLR EODD
10861  033606  013737  025220  035240  11$:    MOV EODD,SEODD          ;SAVE EODD
10862  033614  013737  034706  035164          MOV ESR2,EMS2D          ;INITIALIZE MULP.SRC2 POINTER
10863  033622  013737  035240  025220  1$:     MOV SEODD,EODD          ;RESTORE EODD
10864  033630  105337  035164                  DECB EMS2D
10865  033634  100535                          BMI EMID                ;BRANCH IF NO MORE MULP.SRC2 DIGITS TO WORK ON
10866  033636  013700  034710                  MOV ESR3,R0
10867  033642  013737  034706  025236          MOV ESR2,ELSD
10868  033650  013701  035164                  MOV EMS2D,R1
10869  033654  004737  021456                  JSR PC,ESNK             ;CALL ROUTINE TO GET NEXT SRC2 DIGIT
10870  033660  005702                          TST R2
10871  033662  001517                          BEQ 2$                  ;BRANCH IF DIGIT = 0
10872  033664  005302                          DEC R2
10873  033666  010237  035232                  MOV R2,EVXTVB
10874  033672  006337  035232                  ASL EVXTVB
10875  033676  062737  035210  035232          ADD #EXTVB,EVXTVB       ;SETUP POINTER INTO V-BIT TABLE
10876  033704  010237  035234                  MOV R2,EVXTBP           ;INDEX INTO 1X,2X,ETC TABLE USING
10877  033710  006337  035234                  ASL EVXTBP              ;  NEXT SRC2 DIGIT
10878  033714  062737  035166  035234          ADD #EXTBP,EVXTBP
10879  033722  012737  000040  017450          MOV #40,E0              ;MULTIPLY TABLE VALUE BY PROPER
10880  033730  017737  001300  017452          MOV @EVXTBP,E1          ; POWER OF TEN INDICATOR BY SHIFT
10881  033736  013737  035162  017460          MOV ESPOS,E4            ; POSITION
10882  033744  012737  000037  017454          MOV #37,E2              ; USE ASHP - SRC=TABLE VALUE
10883  033752  012737  034526  017456          MOV #ERT1,E3            ;            SHFT.CT=SHFT.POSITION
10884  033760  012737  034662  017444          MOV #ETRSTK,EORSTK      ;            DST=ERT1
10885  033766  012737  034716  017446          MOV #ETOPSW,EOPSW
10886  033774  004737  030750                  JSR PC,EASHP
10887  034000  042737  177775  034716          BIC #177775,ETOPSW      ;WORK ON V BIT
10888  034006  053737  034716  035236          BIS ETOPSW,EMVBR        ; 'OR' ASHP V BIT WITH RESULT V BIT.
10889  034014  057737  001212  035236          BIS @EVXTVB,EMVBR       ; 'OR' TABLE V BIT WITH RESULT V BIT
10890  034022  012737  000037  017450          MOV #37,E0              ;ADD SHIFTED VALUE TO RESULT
10891  034030  012737  034550  017452          MOV #ERT2,E1            ; USE ADDP - SRC1=ERT2
10892  034036  012737  000037  017454          MOV #37,E2              ;            SRC2=ERT1
10893  034044  012737  034526  017456          MOV #ERT1,E3            ;            DST= ERT2
10894  034052  012737  000037  017460          MOV #37,E4
10895  034060  012737  034550  017462          MOV #ERT2,E5
10896  034066  012737  034662  017444          MOV #ETRSTK,EORSTK
10897  034074  012737  034716  017446          MOV #ETOPSW,EOPSW
10898  034102  004737  023510                  JSR PC,EADDP
10899  034106  042737  177775  034716          BIC #177775,ETOPSW      ;WORK ON V BIT
10900  034114  053737  034716  035236          BIS ETOPSW,EMVBR        ;'OR' ADDP V BIT WITH RESULT
10901
10902  034122  005237  035162          2$:     INC ESPOS               ;INCREMENT SHIFT POSITION FOR NEXT
10903  034126  000635                          BR 1$                   ; MULP SRC2 DIGIT.
10904
10905  034130  012737  000037  017450  EMID:   MOV #37,E0              ;MOVE RESULT INTO MULP DST
10906  034136  012737  034550  017452          MOV #ERT2,E1            ; USE ASHP - SRC=ERT2
10907  034144  005037  017460                  CLR E4                  ;            DST=MULP.DST
```

```
10908  034150  005037  017462                      CLR E5
10909  034154  013737  034712  017454              MOV ESR4,E2             ;           SHFT.CT=0
10910  034162  013737  034714  017456              MOV ESR5,E3
10911  034170  013737  034676  017444              MOV ESOSTK,EORSTK
10912  034176  013737  034700  017446              MOV ESOPSW,EOPSW
10913  034204  004737  030750                      JSR PC,EASHP
10914  034210  053777  035236  163230              BIS EMVBR,@EOPSW        ;MULP CONDITION CODE RESULTS:
10915                                                                      ; N,Z, AND C FROM LAST ASHP
10916                                                                      ; V = 'OR' OF ALL PREVIOUS V'S
10917  034216  013702  017444          EXMD:       MOV EORSTK,R2           ;REGISTER UNLOAD - NEEDED BECAUSE REGISTER
10918                                                                      ;OUTPUTS FOR ASHP ARE R2 AND R3
10919                                                                      ;WHEREAS THOSE FOR MULP AND DIVP ARE R4 AND R5.
10920  034222  016262  000004  000010              MOV 4(R2),10(R2)        ;R4=R2
10921  034230  016262  000006  000012              MOV 6(R2),12(R2)        ;R5=R3
10922  034236  005062  000004                      CLR 4(R2)               ;R2=0
10923  034242  005062  000006                      CLR 6(R2)               ;R3=0
10924  034246  000207                              RTS PC                  ;EXIT MULP EMULATION ROUTINE
```

```
10926
10927  034250  013737  017444  034676  ERSAV:    .SBTTL  MULP/DIVP SUBROUTINES
10928  034256  013737  017446  034700            MOV EORSTK,ESOSTK  ;SAVE MULP/DIVP CALL PARAMETERS
10929  034264  013737  017450  034702            MOV EOPSW,ESOPSW   ;THIS PERMITS CALLING OTHER
10930  034272  013737  017452  034704            MOV E0,ESR0        ;  EMULATION ROUTINES WHILE
10931  034300  013737  017454  034706            MOV E1,ESR1        ;  IN THE MULP/DIVP EMULATION.
10932  034306  013737  017456  034710            MOV E2,ESR2
10933  034314  013737  017460  034712            MOV E3,ESR3
10934  034322  013737  017462  034714            MOV E4,ESR4
10935  034330  000207                            MOV E5,ESR5
                                                  RTS PC
10936
10937  034332  005037  017450          EIRT2:    CLR E0             ;INITIALIZE ERT2 BUFFER TO 0+
10938  034336  012737  034660  017452            MOV #EZDSC,E1      ;  USE ASHP - SRC.LEN=0
10939  034344  005037  017460                    CLR E4             ;             SHFT.CT=0
10940  034350  012737  000037  017454            MOV #37,E2         ;             DST.LEN=31
10941  034356  012737  034550  017456            MOV #ERT2,E3       ;             DST.ADR=ERT2
10942  034364  012737  034662  017444            MOV #ETRSTK,EORSTK
10943  034372  012737  034716  017446            MOV #ETOPSW,EOPSW
10944  034400  004737  030750                    JSR PC,EASHP
10945  034404  000207                            RTS PC
10946
10947  034406  005037  017454          ETSTS1:   CLR E2             ;COMPARE MULP/DIVP SRC1 WITH 0.
10948  034412  012737  034660  017456            MOV #EZDSC,E3      ;  USE CMPP - SRC2.LEN=0
10949  034420  013737  034702  017450            MOV ESR0,E0        ;             SRC1.LEN=MULT.SRC1.LEN
10950  034426  013737  034704  017452            MOV ESR1,E1        ;             SRC1.ADR=MULP.SRC1.ADR
10951  034434  012737  034662  017444            MOV #ETRSTK,EORSTK
10952  034442  012737  034716  017446            MOV #ETOPSW,EOPSW
10953  034450  004737  032346                    JSR PC,ECMPP
10954  034454  000207                            RTS PC
10955
10956  034456  005037  017454          ETSTS2:   CLR E2             ;COMPARE MULP/DIVP SRC2 WITH 0.
10957  034462  012737  034660  017456            MOV #EZDSC,E3      ;  USE CMPP - SRC2.LEN=0
10958  034470  013737  034706  017450            MOV ESR2,E0        ;             SRC1.LEN=MULP.SRC2.LEN
10959  034476  013737  034710  017452            MOV ESR3,E1        ;             SRC1.ADR=MULP.SRC2.ADR
10960  034504  012737  034662  017444            MOV #ETRSTK,EORSTK
10961  034512  012737  034716  017446            MOV #ETOPSW,EOPSW
10962  034520  004737  032346                    JSR PC,ECMPP
10963  034524  000207                            RTS PC
10964
```

```
10966                                          .SBTTL                  MULP/DIVP VARIABLES AND BUFFERS
10967
10968  034526  000011                  ERT1:   .BLKW 11
10969  034550  000011                  ERT2:   .BLKW 11
10970  034572  000011                  ERT3:   .BLKW 11
10971  034614  000011                  ERT4:   .BLKW 11
10972  034636  000011                  ERT5:   .BLKW 11
10973  034660  000000                  EZDSC:  .WORD 0
10974  034662  000006                  ETRSTK: .BLKW 6
10975  034676  000000                  ESOSTK: .WORD 0
10976  034700  000000                  ESOPSW: .WORD 0
10977  034702  000000                  ESR0:   .WORD 0                 ;MULP/DIVP SRC1.LEN
10978  034704  000000                  ESR1:   .WORD 0                 ;MULP/DIVP SRC1.ADR
10979  034706  000000                  ESR2:   .WORD 0                 ;MULP/DIVP SRC2.LEN
10980  034710  000000                  ESR3:   .WORD 0                 ;MULP/DIVP SRC2.ADR
10981  034712  000000                  ESR4:   .WORD 0                 ;MULP/DIVP DST.LEN
10982  034714  000000                  ESR5:   .WORD 0                 ;MULP/DIVP DST.ADR
10983  034716  000000                  ETOPSW: .WORD 0
10984  034720  000011                  E1XT:   .BLKW 11                ; 1 X SRC1
10985  034742  000011                  E2XT:   .BLKW 11                ; 2 X SRC1
10986  034764  000011                  E3XT:   .BLKW 11                ; 3 X SRC1
10987  035006  000011                  E4XT:   .BLKW 11                ; 4 X SRC1
10988  035030  000011                  E5XT:   .BLKW 11                ; 5 X SRC1
10989  035052  000011                  E6XT:   .BLKW 11                ; 6 X SRC1
10990  035074  000011                  E7XT:   .BLKW 11                ; 7 X SRC1
10991  035116  000011                  E8XT:   .BLKW 11                ; 8 X SRC1
10992  035140  000011                  E9XT:   .BLKW 11                ; 9 X SRC1
10993  035162  000000                  ESPOS:  .WORD 0
10994  035164  000000                  EMS2D:  .WORD 0
10995  035166  034720                  EXTBP:  .WORD E1XT
10996  035170  034742                          .WORD E2XT
10997  035172  034764                          .WORD E3XT
10998  035174  035006                          .WORD E4XT
10999  035176  035030                          .WORD E5XT
11000  035200  035052                          .WORD E6XT
11001  035202  035074                          .WORD E7XT
11002  035204  035116                          .WORD E8XT
11003  035206  035140                          .WORD E9XT
11004  035210  000011                  EXTVB:  .BLKW 11                ;V-BIT TABLE
11005  035232  000000                  EVXTVB: .WORD 0
11006  035234  000000                  EVXTBP: .WORD 0
11007  035236  000000                  EMVBR:  .WORD 0
11008  035240  000000                  SEODD:  .WORD 0
11009  035242  000000                  ESS2SN: .WORD 0
11010  035244  000000                  ESS1SN: .WORD 0
11011  035246  000000                  ESUBCT: .WORD 0
```

```
11013                                                   .SBTTL                  DIVP INSTRUCTION
11014
11015  035250  004737  034250          EDIVP:         JSR PC,ERSAV            ;SAVE DIVP CALL PARAMETERS
11016  035254  005037  036316                         CLR EZDF                ;CLEAR ZERO DIVIDE FLAG
11017  035260  005037  035162                         CLR ESPOS               ;CLEAR SHIFT POSITION
11018  035264  004737  034332                         JSR PC,EIRT2            ;INITIALIZE TEMPORARY RESULT BUFFER (ERT2) TO 0+
11019  035270  004737  034406                         JSR PC,ETSTS1           ;IS DIVP SRC1 = 0?
11020  035274  032737  000004  034716                 BIT #4,ETOPSW           ;
11021  035302  001152                                 BNE E1XZD               ;BRANCH IF YES
11022  035304  042737  177767  034716                 BIC #177767,ETOPSW
11023  035312  013737  034716  035244                 MOV ETOPSW,ESS1SN       ;SAVE SRC1 SIGN
11024  035320  004737  034456                         JSR PC,ETSTS2           ;IS DIVP SRC2=0?
11025  035324  032737  000004  034716                 BIT #4,ETOPSW
11026  035332  001134                                 BNE E1DID               ;BRANCH IF YES
11027  035334  042737  177767  034716                 BIC #177767,ETOPSW
11028  035342  013737  034716  035242                 MOV ETOPSW,ESS2SN       ;SAVE SRC2 SIGN
11029
11030  035350  013737  034702  017450                 MOV ESR0,E0             ;MOVE DIVP SRC1 INTO ERT3
11031  035356  013737  034704  017452                 MOV ESR1,E1             ; USE ASHP - SRC = DIVP.SRC1
11032  035364  005037  017460                         CLR E4                  ;            DST = ERT3
11033  035370  005037  017462                         CLR E5                  ;            SHFT.CT=0
11034  035374  012737  000040  017454                 MOV #40,E2
11035  035402  012737  034572  017456                 MOV #ERT3,E3
11036  035410  004737  030750                         JSR PC,EASHP
11037  035414  142737  000001  034612                 BICB #1,@#ERT3+20               ;MAKE ERT3 SIGN = +
11038
11039  035422  013737  034706  017450                 MOV ESR2,E0             ;MOVE DIVP SRC2 INTO ERT4
11040  035430  013737  034710  017452                 MOV ESR3,E1             ; USE ASHP - SRC = DIVP SRC2
11041  035436  005037  017460                         CLR E4                  ;            DST = ERT4
11042  035442  005037  017462                         CLR E5                  ;            SHFT.CT = 0
11043  035446  012737  000037  017454                 MOV #37,E2
11044  035454  012737  034614  017456                 MOV #ERT4,E3
11045  035462  004737  030750                         JSR PC,EASHP
11046  035466  142737  000001  034633                 BICB #1,@#ERT4+17               ;MAKE ERT4 SIGN +
11047
11048  035474  012737  000040  017450  EPOSS1:       MOV #40,E0              ;SHIFT DIVP SRC1 LEFT UNTIL SRC2 - SRC1(SHIFTED)
11049  035502  012737  034572  017452                 MOV #ERT3,E1            ;  IS NEGATIVE. NOTE: LEN=40 IS LEGAL FOR EMUL.
11050  035510  012737  000037  017454                 MOV #37,E2              ;SUBTRACT ERT3 FROM ERT4
11051  035516  012737  034614  017456                 MOV #ERT4,E3            ; USE SUBP - SRC1 = ERT3
11052  035524  012737  000037  017460                 MOV #37,E4              ;            SRC2 = ERT4
11053  035532  012737  034526  017462                 MOV #ERT1,E5            ;            DST =  ERT1
11054  035540  004737  023526                         JSR PC,ESUBP
11055  035544  032777  000010  161674                 BIT #10,@EOPSW          ;IS RESULT NEGATIVE?
11056  035552  001030                                 BNE EPOSD               ;BRANCH IF YES
11057  035554  012737  000040  017450                 MOV #40,E0              ;SHIFT DIVP SRC1 LEFT 1 PLACE
11058  035562  012737  034572  017452                 MOV #ERT3,E1            ; USE ASHP - SRC = ERT3
11059  035570  012737  000001  017460                 MOV #1,E4               ;            DST = ERT3
11060  035576  012737  000040  017454                 MOV #40,E2              ;            SHFT.CT = 1
11061  035604  012737  034572  017456                 MOV #ERT3,E3            ;NOTE - LEGAL FOR EMULATOR.
11062  035612  004737  030750                         JSR PC,EASHP
11063  035616  005237  035162                         INC ESPOS               ;INCREMENT SHIFT POSITION
11064  035622  000724                                 BR EPOSS1
11065  035624  000137  036162          E1DID:         JMP EDID
11066  035630  000137  036246          E1XZD:         JMP EXZD
```

```
11067
11068  035634  005737  035162          EPOSD:      TST ESPOS           ;SHIFT POSITION = 0?
11069  035640  001550                              BEQ EDID            ;BRANCH IF YES
11070
11071  035642  012737  000040  017450  EDIVL:      MOV #40,E0          ;REPOSITION ERT3 BACK 1 PLACE(RIGHT)
11072  035650  012737  034572  017452              MOV #ERT3,E1        ; USE ASHP - SRC = ERT3
11073  035656  012737  000377  017460              MOV #377,E4         ;            DST = ERT3
11074  035664  012737  000040  017454              MOV #40,E2          ;            SHFT.CT=-1
11075  035672  012737  034572  017456              MOV #ERT3,E3        ;NOTE - THIS IS LEGAL FOR EMULATOR
11076  035700  004737  030750                      JSR PC,EASHP
11077
11078  035704  005037  035246                      CLR ESUBCT          ;CLEAR SUBTRACT COUNTER
11079
11080  035710  012737  000040  017450      1$:     MOV #40,E0          ;SUBTRACT DIVP SRC1(SHIFTED) FROM DIVP SRC2
11081  035716  012737  034572  017452              MOV #ERT3,E1        ; USE SUBP - SRC1 = ERT3
11082  035724  012737  000037  017454              MOV #37,E2          ;            SRC2 = ERT4
11083  035732  012737  034614  017456              MOV #ERT4,E3        ;            DST =  ERT4
11084  035740  012737  000037  017460              MOV #37,E4
11085  035746  012737  034614  017462              MOV #ERT4,E5
11086  035754  004737  023526                      JSR PC,ESUBP
11087  035760  032777  000010  161460              BIT #10,@EOPSW      ;IS RESULT OF SUBP POSITIVE?
11088  035766  001003                              BNE ESBTD           ;BRANCH IF NO
11089  035770  005237  035246                      INC ESUBCT          ;INCREMENT SUBTRACT COUNTER
11090  035774  000745                              BR 1$
11091
11092  035776  012737  000040  017450  ESBTD:     MOV #40,E0          ;BACKUP TO LAST POSITIVE RESULT FROM SUBP
11093  036004  012737  034572  017452              MOV #ERT3,E1        ; USE ADDP - SRC1 = ERT3
11094  036012  012737  000037  017454              MOV #37,E2          ;            SRC2 = ERT4
11095  036020  012737  034614  017456              MOV #ERT4,E3        ;            DST = ERT4
11096  036026  012737  000037  017460              MOV #37,E4
11097  036034  012737  034614  017462              MOV #ERT4,E5
11098  036042  004737  023510                      JSR PC,EADDP
11099
11100  036046  012737  000037  017450              MOV #37,E0          ;STORE SUBTRACT COUNTER IN RESULT(ERT2)
11101  036054  012737  034550  017452              MOV #ERT2,E1        ;SHIFT RESULT, THEN ENTER DIGIT
11102  036062  012737  000001  017460              MOV #1,E4           ; USE ASHP - SRC = ERT2
11103  036070  012737  000037  017454              MOV #37,E2          ;              DST=ERT2
11104  036076  012737  034550  017456              MOV #ERT2,E3        ;            SHFT.CT=1
11105  036104  004737  030750                      JSR PC,EASHP
11106  036110  006337  035246                      ASL ESUBCT          ;INSERT SUBTRACT COUNTER IN RESULT
11107  036114  006337  035246                      ASL ESUBCT
11108  036120  006337  035246                      ASL ESUBCT
11109  036124  006337  035246                      ASL ESUBCT
11110  036130  153737  035246  034567              BISB ESUBCT,@#ERT2+17
11111  036136  005337  035162                      DEC ESPOS           ;DECREMENT SHIFT POSITION
11112  036142  001237                              BNE EDIVL           ;IS SHIFT POSITION=0? BRANCH IF NO
11113  036144  023737  035242  035244              CMP ESS2SN,ESS1SN   ;DIVP SRC1 SIGN = DIVP SRC2 SIGN?
11114  036152  001403                              BEQ EDID            ;BRANCH IF YES
11115  036154  152737  000001  034567              BISB #1,@#ERT2+17           ;NO - MAKE SIGN IN ERT2 NEGATIVE
11116
11117  036162  012737  000037  017450  EDID:      MOV #37,E0          ;MOVE RESULT INTO DST
11118  036170  012737  034550  017452              MOV #ERT2,E1        ; USE ASHP - SRC = ERT2
11119  036176  005037  017460                      CLR E4              ;            DST = DIVP.DST
11120  036202  005037  017462                      CLR E5              ;            SHFT.CT = 0
```

```
11121  036206  013737  034712  017454                  MOV ESR4,E2
11122  036214  013737  034714  017456                  MOV ESR5,E3
11123  036222  013737  034676  017444                  MOV ESOSTK,EORSTK
11124  036230  013737  034700  017446                  MOV ESOPSW,EOPSW
11125  036236  004737  030750                          JSR PC,EASHP
11126  036242  000137  034216                          JMP EXMD                ;EXIT DIVP
11127
11128  036246  013737  034700  017446  EXZD:           MOV ESOPSW,EOPSW
11129  036254  052777  000003  161164                  BIS #3,@EOPSW           ;EXIT FROM DIVIDE BY ZERO
11130                                                                          ;SET V & C COND. CODES
11131  036262  012737  177777  036316                  MOV #177777,EZDF        ;SET ZERO DIVIDE FLAG TO SIGNAL
11132                                                                          ;  TABLE DRIVER NOT TO COMPARE
11133                                                                          ;  ANYTHING EXCEPT V & C COND. CODE
11134  036270  013737  034704  036320                  MOV ESR1,EZDBEG         ;SAVE POINTER TO START & # OF BYTES
11135                                                                          ;  OF DST STRING
11136  036276  013737  034702  036322                  MOV ESR0,EZDEND         ;CONTENTS OF DST STRING UNPREDICTABLE
11137  036304  006237  036322                          ASR EZDEND              ;  AFTER ZERO DIVP
11138  036310  005237  036322                          INC EZDEND
11139  036314  000207                                  RTS PC                  ;RESULTS
11140
11141  036316  000000          EZDF:           .WORD 0
11142  036320  000000          EZDBEG:         .WORD 0
11143  036322  000000          EZDEND:         .WORD 0
11144
```

```
11146
11147  036324  013701  017450          EL2D0:  MOV E0,R1                ;GET REGISTER POINTER
11148  036330  012102                  EL2:    MOV (R1)+,R2             ;GET ADDRESS OF DESCRIPTOR
11149  036332  011237  017450                  MOV (R2),E0              ;LOAD 1ST WORD OF DESC INTO E0
11150  036336  016237  000002  017452          MOV 2(R2),E1             ;LOAD 2ND WORD OF DESC INTO E1
11151  036344  011102                          MOV (R1),R2              ;GET ADDRESS OF NEXT DESC
11152  036346  011237  017454                  MOV (R2),E2              ;LOAD 1ST WORD OF DESC INTO E2
11153  036352  016237  000002  017456          MOV 2(R2),E3             ;LOAD 2ND WORD OF DESC INTO E3
11154  036360  013700  017444          EXL2:   MOV EORSTK,R0            ;RETURN CLEAN UP
11155  036364  013720  017450                  MOV E0,(R0)+             ;R0=R0
11156  036370  013720  017452                  MOV E1,(R0)+             ;R1=R1
11157  036374  013720  017454                  MOV E2,(R0)+             ;R2=R2
11158  036400  013720  017456                  MOV E3,(R0)+             ;R3=R3
11159  036404  013720  017460                  MOV E4,(R0)+             ;R4=R4
11160  036410  013720  017462                  MOV E5,(R0)+             ;R5=R5
11161  036414  013720  017464                  MOV E6,(R0)+             ;R6=R6
11162  036420  012777  000017  161020          MOV #17,@EOPSW           ;SET ALL COND. CODE BITS.
11163  036426  000207                          RTS PC
11164
11165  036430                  EL2D1:
11166  036430  013701  017452                  MOV E1,R1
11167  036434  000735                          BR EL2
11168
11169  036436                  EL2D2:
11170  036436  013701  017454                  MOV E2,R1
11171  036442  000732                          BR EL2
11172
11173  036444                  EL2D3:
11174  036444  013701  017456                  MOV E3,R1
11175  036450  000727                          BR EL2
11176
11177  036452                  EL2D4:
11178  036452  013701  017460                  MOV E4,R1
11179  036456  062737  000004  017460          ADD #4,E4
11180  036464  000721                          BR EL2
11181
11182  036466                  EL2D5:
11183  036466  013701  017462                  MOV E5,R1
11184  036472  062737  000004  017462          ADD #4,E5
11185  036500  000713                          BR EL2
11186
11187  036502                  EL2D6:
11188  036502  013701  017464                  MOV E6,R1
11189  036506  012102                          MOV (R1)+,R2
11190  036510  011237  017450                  MOV (R2),E0
11191  036514  016237  000002  017452          MOV 2(R2),E1
11192  036522  012102                          MOV (R1)+,R2
11193  036524  011237  017454                  MOV (R2),E2
11194  036530  016237  000002  017456          MOV 2(R2),E3
11195  036536  010137  017464                  MOV R1,E6                ;NOTE:L2D6 UPDATES R6 (POPS STACK)
11196  036542  000137  036360                  JMP EXL2
11197
11198  036546                  EL2D7:
11199  036546  013701  050166                  MOV TINST+2,R1
```

```
11200  036552  011137  017450                    MOV (R1),E0
11201  036556  016137  000002  017452            MOV 2(R1),E1
11202  036564  013701  050170                    MOV TINST+4,R1
11203  036570  011137  017454                    MOV (R1),E2
11204  036574  016137  000002  017456            MOV 2(R1),E3
11205  036602  000137  036360                    JMP EXL2
11206
11207
```

```
11209  036606  013701  017450          EL3D0:  MOV E0,R1               ;GET REGISTER POINTER
11210  036612  012102                  EL3:    MOV (R1)+,R2            ;GET ADDRESS OF DESCRIPTOR
11211  036614  011237  017450                  MOV (R2),E0             ;LOAD 1ST WORD OF DESC INTO E0
11212  036620  016237  000002  017452          MOV 2(R2),E1            ;LOAD 2ND WORD OF DESC INTO E1
11213  036626  012102                          MOV (R1)+,R2            ;GET ADDRESS OF NEXT DESC
11214  036630  011237  017454                  MOV (R2),E2             ;LOAD 1ST WORD OF DESC INTO E2
11215  036634  016237  000002  017456          MOV 2(R2),E3            ;LOAD 2ND WORD OF DESC INTO E3
11216  036642  011102                          MOV (R1),R2             ;GET ADDRESS OF NEXT DESC
11217  036644  011237  017460                  MOV (R2),E4             ;LOAD 1ST WORD OF DESC INTO E4
11218  036650  016237  000002  017462          MOV 2(R2),E5            ;LOAD 2ND WORD OF DESC INTO E5
11219  036656  000137  036360                  JMP EXL2
11220
11221  036662                          EL3D1:
11222  036662  013701  017452                  MOV E1,R1
11223  036666  000751                          BR EL3
11224
11225  036670                          EL3D2:
11226  036670  013701  017454                  MOV E2,R1
11227  036674  000746                          BR EL3
11228
11229  036676                          EL3D3:
11230  036676  013701  017456                  MOV E3,R1
11231  036702  000743                          BR EL3
11232
11233  036704                          EL3D4:
11234  036704  013701  017460                  MOV E4,R1
11235  036710  000740                          BR EL3
11236
11237  036712                          EL3D5:
11238  036712  013701  017462                  MOV E5,R1
11239  036716  000735                          BR EL3
11240
11241  036720                          EL3D6:
11242  036720  013701  017464                  MOV E6,R1
11243  036724  012102                          MOV (R1)+,R2
11244  036726  011237  017450                  MOV (R2),E0
11245  036732  016237  000002  017452          MOV 2(R2),E1
11246  036740  012102                          MOV (R1)+,R2
11247  036742  011237  017454                  MOV (R2),E2
11248  036746  016237  000002  017456          MOV 2(R2),E3
11249  036754  012102                          MOV (R1)+,R2
11250  036756  011237  017460                  MOV (R2),E4
11251  036762  016237  000002  017462          MOV 2(R2),E5
11252  036770  010137  017464                  MOV R1,E6               ;NOTE:L2D6 UPDATES R6 (POPS STACK)
11253  036774  000137  036360                  JMP EXL2
11254
11255  037000                          EL3D7:
11256  037000  013701  050166                  MOV TINST+2,R1
11257  037004  011137  017450                  MOV (R1),E0
11258  037010  016137  000002  017452          MOV 2(R1),E1
11259  037016  013701  050170                  MOV TINST+4,R1
11260  037022  011137  017454                  MOV (R1),E2
11261  037026  016137  000002  017456          MOV 2(R1),E3
11262  037034  013701  050172                  MOV TINST+6,R1
```

```
11263  037040  011137  017460                    MOV (R1),E4
11264  037044  016137  000002  017462            MOV 2(R1),E5
11265  037052  000137  036360                    JMP EXL2
11266
```

```
11268                                           .SBTTL  CIS INSTRUCTION TEST LOOP
11269
11270  037056  012737  177777  001750  SEEDST: MOV #177777,ESEED       ;SET ENTER RNG SEED FLAG
11271  037064  000504                          BR DVTST
11273  037066  012737  177777  001754  START:  MOV #177777,N200M       ;SET FLAG TO INDICATE THAT PROG WAS
11274                                                                   ;STARTED AT LOC 200
11276  037074  012737  177777  002212  QVST:   MOV #177777,QVMODE      ;SET QVMODE FLAG
11282  037102  005037  001752          NST:    CLR DENS                ;CLEAR DON'T ENTER NORMAL RNG SEED FLAG.
11283  037106  005037  001120                  CLR $TESTN              ;CLEAR TEST COUNT
11284                                           .SBTTL  INITIALIZE THE COMMON TAGS
  (1)  037112  012706  001100                  MOV     #STACK,SP       ;;SETUP THE STACK POINTER
  (1)                                           ;;INITIALIZE A FEW VECTORS
  (1)  037116  012737  112176  000034          MOV     #$TRAP,@#TRAPVEC ;;TRAP VECTOR FOR TRAP CALLS
  (1)  037124  012737  000340  000036          MOV     #340,@#TRAPVEC+2;LEVEL 7
  (1)  037132  012737  112244  000024          MOV     #$PWRDN,@#PWRVEC ;;POWER FAILURE VECTOR
  (1)  037140  012737  000340  000026          MOV     #340,@#PWRVEC+2 ;;LEVEL 7
  (2)                                           ;;SIZE FOR A HARDWARE SWITCH REGISTER. IF NOT FOUND OR IT IS
  (2)                                           ;;EQUAL TO A "-1", SETUP FOR A SOFTWARE SWITCH REGISTER.
  (2)  037146  013746  000004                  MOV     @#ERRVEC,-(SP)  ;;SAVE ERROR VECTOR
  (2)  037152  012737  037206  000004          MOV     #64$,@#ERRVEC   ;;SET UP ERROR VECTOR
  (2)  037160  012737  177570  001736          MOV     #DSWR,SWR       ;;SETUP FOR A HARDWARE SWICH REGISTER
  (2)  037166  012737  177570  001740          MOV     #DDISP,DISPLAY  ;;AND A HARDWARE DISPLAY REGISTER
  (2)  037174  022777  177777  142534          CMP     #-1,@SWR        ;;TRY TO REFERENCE HARDWARE SWR
  (2)  037202  001012                          BNE     66$             ;;BRANCH IF NO TIMEOUT TRAP OCCURRED
  (2)                                                                  ;;AND  THE HARDWARE SWR IS NOT = -1
  (2)  037204  000403                          BR      65$             ;;BRANCH IF NO TIMEOUT
  (2)  037206  012716  037214          64$:    MOV     #65$,(SP)       ;;SET UP FOR TRAP RETURN
  (2)  037212  000002                          RTI
  (2)  037214  012737  000176  001736  65$:    MOV     #SWREG,SWR      ;;POINT TO SOFTWARE SWR
  (2)  037222  012737  000174  001740          MOV     #DISPREG,DISPLAY
  (2)  037230  012637  000004          66$:    MOV     (SP)+,@#ERRVEC  ;;RESTORE ERROR VECTOR
  (1)
  (2)  037234  005037  001122                  CLR     $PASS           ;;CLEAR PASS COUNT
  (2)  037240  132737  000200  001135          BITB    #APTSIZE,$ENVM  ;;TEST USER SIZE UNDER APT
  (2)  037246  001403                          BEQ     67$             ;;YES,USE NON-APT SWITCH
  (2)  037250  012737  001136  001736          MOV     #$SWREG,SWR     ;;NO,USE APT SWITCH REGISTER
  (2)  037256                          67$:
11285                                                                  ;  NO QUESTIONS ASKED - EXERCISES FIXED TABLE TEST
11286                                                                  ;  CONDITIONS FIRST THEN ENTERS RANDOM MODE TESTING
11287  037256  012737  177777  002100          MOV #177777,FSRUN
11288  037264  005037  001660                  CLR INCSQ1              ;PRIOR TO EACH TEST, BUFFERS WILL BE INITIALIZED TO ZERO
11289  037270  005037  001662                  CLR INCSQ2
11290  037274  000470                          BR COMST
11291  037276  005037  002212          DVTST:  CLR QVMODE
11292  037302  005037  001752                  CLR DENS                ;CLEAR DON'T ENTER NORMAL RNG SEED FLAG
11293                                           .SBTTL  INITIALIZE THE COMMON TAGS
  (1)  037306  012706  001100                  MOV     #STACK,SP       ;;SETUP THE STACK POINTER
  (1)                                           ;;INITIALIZE A FEW VECTORS
  (1)  037312  012737  112176  000034          MOV     #$TRAP,@#TRAPVEC ;;TRAP VECTOR FOR TRAP CALLS
  (1)  037320  012737  000340  000036          MOV     #340,@#TRAPVEC+2;LEVEL 7
  (1)  037326  012737  112244  000024          MOV     #$PWRDN,@#PWRVEC ;;POWER FAILURE VECTOR
  (1)  037334  012737  000340  000026          MOV     #340,@#PWRVEC+2 ;;LEVEL 7
  (2)                                           ;;SIZE FOR A HARDWARE SWITCH REGISTER. IF NOT FOUND OR IT IS
  (2)                                           ;;EQUAL TO A "-1", SETUP FOR A SOFTWARE SWITCH REGISTER.
```

```
   (2)  037342  013746  000004                    MOV     @#ERRVEC,-(SP)  ;;SAVE ERROR VECTOR
   (2)  037346  012737  037402  000004            MOV     #64$,@#ERRVEC   ;;SET UP ERROR VECTOR
   (2)  037354  012737  177570  001736            MOV     #DSWR,SWR       ;;SETUP FOR A HARDWARE SWICH REGISTER
   (2)  037362  012737  177570  001740            MOV     #DDISP,DISPLAY  ;;AND A HARDWARE DISPLAY REGISTER
   (2)  037370  022777  177777  142340            CMP     #-1,@SWR        ;;TRY TO REFERENCE HARDWARE SWR
   (2)  037376  001012                            BNE     66$             ;;BRANCH IF NO TIMEOUT TRAP OCCURRED
   (2)                                                                    ;;AND  THE HARDWARE SWR IS NOT = -1
   (2)  037400  000403                            BR      65$             ;;BRANCH IF NO TIMEOUT
   (2)  037402  012716  037410            64$:    MOV     #65$,(SP)       ;;SET UP FOR TRAP RETURN
   (2)  037406  000002                            RTI
   (2)  037410  012737  000176  001736    65$:    MOV     #SWREG,SWR      ;;POINT TO SOFTWARE SWR
   (2)  037416  012737  000174  001740            MOV     #DISPREG,DISPLAY
   (2)  037424  012637  000004            66$:    MOV     (SP)+,@#ERRVEC  ;;RESTORE ERROR VECTOR
   (1)
   (2)  037430  005037  001122                    CLR     $PASS           ;;CLEAR PASS COUNT
   (2)  037434  132737  000200  001135            BITB    #APTSIZE,$ENVM  ;;TEST USER SIZE UNDER APT
   (2)  037442  001403                            BEQ     67$             ;;YES,USE NON-APT SWITCH
   (2)  037444  012737  001136  001736            MOV     #$SWREG,SWR     ;;NO,USE APT SWITCH REGISTER
   (2)  037452                            67$:
11294                                                                     ;  RESULTS IN DIALOG WITH USER TO DETERMINE
11295                                                                     ;  EXACT RUN MODE DESIRED.
11300  037452  005037  002100                    CLR FSRUN
11301  037456                            COMST:
11302  037456  005077  142202                    CLR @TPSW               ;SET PROCESSOR PRIORITY TO ZERO
11303  037462  012737  037522  000010            MOV #22$,@#RESVEC       ;CHECK FOR SWITCH ON CIS MODULE TO BE IN CORRECT POSITIO
11304  037470  005037  000012                    CLR @#RESVEC+2
11305  037474  076001                            76001                   ;THIS INST SHOULD TRAP TO LOC 10 IF
11306                                                                     ;  SWITCH POSITION IS OK; OTHERWISE
11307                                                                     ;  IT WILL ACT LIKE A 'NOP'.
11308  037476                                    PRINTB #SWNG            ;INDICATE THAT SWITCH POSITION IS INCORECT
   (6)  037476  012746  013460                    MOV     #SWNG,-(SP)
   (3)  037502  010600                            MOV     SP,R0
   (4)  037504  004737  066232                    JSR PC,FPRINT
11309  037510  012737  000001  001114            MOV #1,$MSGTY           ;TELL APT THERE IS A FATAL ERROR        ::REV-C
11310  037516  000000                            HALT
11311  037520  000756                            BR COMST
11318  037522  005726                    22$:    TST (SP)+       ;FIX UP STACK
11319  037524  005726                            TST (SP)+
11320  037526  005737  001750                    TST ESEED       ;GET NEW SEED CONSTANTS?
11321  037532  001437                            BEQ 2$          ;BRANCH IF NO
11322  037534                            111$:   PRINTB #ACCSEED ;PRINT MESSAGE: ENTER RNG SEED CONSTANTS
   (6)  037534  012746  016175                    MOV     #ACCSEED,-(SP)
   (3)  037540  010600                            MOV     SP,R0
   (4)  037542  004737  066232                    JSR PC,FPRINT
11323  037546  004737  065704                    JSR PC,ACCOCT   ;GET OCTAL SEED
11324  037552  000770                            BR 111$         ;<CR> RETURN
11325  037554  000240                            NOP             ;XXXXXX<CR> RETURN
11326  037556  000240                            NOP             ;XXXXXX<-> RETURN
11327  037560  012637  064414                    MOV (SP)+,RNCON ;INSERT FIRST SEED CONSTANT
11328  037564  004737  065704                    JSR PC,ACCOCT   ;GET SECOND SEED
11329  037570  000761                            BR 111$
11330  037572  000240                            NOP
11331  037574  000240                            NOP
11332  037576  012637  064416                    MOV (SP)+,RP1   ;INSERT SECOND SEED CONSTANT
```

```
11333  037602  004737  065704                      JSR PC,ACCOCT   ;GET THIRD SEED
11334  037606  000752                              BR 111$
11335  037610  000240                              NOP
11336  037612  000240                              NOP
11337  037614  012637  064420                      MOV (SP)+,RP2   ;INSERT THIRD SEED CONSTANT
11338  037620  012737  177777  001752              MOV #177777,DENS;SET DON'T ENTER NORMAL SEED FLAG
11339  037626  005037  001750                      CLR ESEED
11340  037632  012737  060226  000010  2$:         MOV #ILLSER,@#RESVEC    ;SETUP ILLEGAL INST TRAP CATCHER
11342  037640  005037  000012                      CLR @#RESVEC+2
11343  037644  012737  060424  000250              MOV #MMVIOL,@#MMVEC     ;SETUP MEMORY MANAGEMENT TRAP CATCHER
11344  037652  005037  000252                      CLR @#MMVEC+2
11345  037656  012737  060100  000004              MOV #HLTSER,@#ERRVEC    ;SETUP TIMEOUT INST. TRAP VECTOR
11346  037664  005037  000006                      CLR @#ERRVEC+2
11347  037670  004737  054520                      JSR PC,SIZEPT           ;SETUP PROCESSOR DEPENDENT CONSTANTS
11348  037674  023727  000042  053672  1$:         CMP @#42,#ENDAD         ;IF IN ACT CHAIN MODE SKIP PRINTING OF PROG TITLE
11349  037702  001405                              BEQ 14$
11350  037704  005737  001122                      TST $PASS       ;IDENTIFY PROGRAM ON 1ST PASS ONLY
11351  037710  001002                              BNE 14$
11352  037712  104401                              TYPE
11353  037714  016705                              PNAME                   ;TYPE PROGRAM NAME
11354  037716  005037  002474          14$:        CLR ONEINS              ;CLEAR SINGLE INST TEST FLAG
11355  037722  012737  000414  050072              MOV #414,TOLTC          ;INHIBIT LTC TURN ON
11357  037730  012737  000207  062012              MOV #207,DI             ;INHIBIT INTERRUPT DURING INTR SERVICE DIVPI
11358  037736  012737  000403  050124              MOV #403,TOPC2          ;INHIBIT LATENCY & INTERRUPTABILITY TURN ON
11359  037744  012737  000403  050134              MOV #403,TOPC1
11361  037752  005037  002060                      CLR ERRCT               ;CLEAR ERROR COUNT
11362  037756  005037  002166                      CLR DEN                 ;CLEAR D-SPACE ENABLE FLAG
11363  037762  005037  003034                      CLR LCNT                ;CLEAR LTC COUNT
11364  037766  005037  002550                      CLR LATEN               ;CLEAR LATENCY TESTING FLAG
11365  037772  005037  002222                      CLR STOPTF              ;CLEAR FLAG WHICH WHEN CLR WILL TRIGGER
11366                                                                      ;  PROGRAM TO REQUEST STOP TEST NUMBER
11367  037776  005037  002136                      CLR FATAL               ;CLEAR FATAL ERROR INDICATOR
11368  040002  005037  001764                      CLR RANDOM              ;CLEAR RANDOM EXERCISE MODE FLAG
11369  040006  005037  002046                      CLR NOERDS              ;CLEAR 'NO-ERROR DISPLAY' SWITCH
11378  040012  004737  055760          66$:        JSR PC,SETPAR           ;SETUP PAR'S (MEM MGMT)
11379  040016  013700  001654                      MOV PSEED,R0            ;FORM RNG PRINT SEED MASK
11380  040022  005100                              COM R0
11381  040024  005200                              INC R0
11382  040026  010037  002102                      MOV R0,MSEED
11384  040032  005737  001752                      TST DENS                ;ENTER NORMAL SEED?
11385  040036  001011                              BNE 61$                 ;BRANCH IF NO
11387  040040  013737  064422  064414              MOV KRNCON,RNCON        ;INITIALIZE RANDOM # GENERATOR
11388  040046  013737  064424  064416              MOV KRP1,RP1
11389  040054  013737  064426  064420              MOV KRP2,RP2
11390  040062  012737  073054  073052  61$:        MOV #IL2D,INPTBL        ;INITIALIZE INPUT TABLE POINTER
11392  040070  005737  002100                      TST FSRUN               ;FIELD SERVICE TYPE RUN
11393  040074  001431                              BEQ 13$                 ;BRANCH IF NO TO ENTER DIALOG WITH USER
11395                                                                      ;DETERMINE IF LINE CLOCK IS AVAILABLE FOR
11396                                                                      ;  FIELD SERVICE TYPE RUN
11397  040076  004737  063212          31$:        JSR PC,LTCP             ;IS LTC ON SYSTEM?
11398  040102  000137  040142                      JMP 22$                 ;NO - CANT TEST INTERRUPTABILITY
11399  040106  005737  001122                      TST $PASS               ;IDENTIFY INTR SOURCE ON 1ST PASS
11400  040112  001005                              BNE 103$
11401  040114                                      PRINTB #KW11L           ;INDICATE THAT LINE CLOCK WILL BE USED
```

```
   (6)  040114  012746  013704                MOV     #KW11L,-(SP)
   (3)  040120  010600                        MOV     SP,R0
   (4)  040122  004737  066232                JSR PC,FPRINT
11402
11403  040126  004737  063074          103$:  JSR PC,LTCSUP          ;FOR INTERRUPT SOURCE.
11404  040132  004737  063136                 JSR PC,LTCCNT          ;SYNC UP TO LTC
11405  040136  000137  040712                 JMP FDIALG             ;DETERMINE COUNT PER CLOCK TICK
11406  040142                           32$:  PRINTB #NOINT          ;SKIP OVER DIALOG WITH USER
   (6)  040142  012746  013405                MOV     #NOINT,-(SP)   ;PRINT   CANT TEST INTR MESSAGE
   (3)  040146  010600                        MOV     SP,R0
   (4)  040150  004737  066232                JSR PC,FPRINT
11407  040154  000137  040712                 JMP FDIALG
11409  040160                           13$:  PRINTB #ASKINT         ;ASK IF INTERRUPTABILITY MODE IS DESIRED?
   (6)  040160  012746  012725                MOV     #ASKINT,-(SP)
   (3)  040164  010600                        MOV     SP,R0
   (4)  040166  004737  066232                JSR PC,FPRINT
11410  040172  004737  065350                 JSR PC,YORN            ;ACCEPT ASCIZ FROM TTY
11411  040176  000137  040502                 JMP ARMQ               ;N RESPONSE
11412  040202  000137  040216                 JMP 5$                 ;Y RESPONSE
11413  040206  000137  040502                 JMP ARMQ               ;R OR H RESPONSE (ILLEGAL HERE)
11414  040212  000137  040502                 JMP ARMQ               ;C RESPONSE (ILLEGAL HERE)
11415
11416  040216                            5$:  PRINTB #ASKSRC          ;ASK FOR INTERRUPT SOURCE
   (6)  040216  012746  013110                MOV     #ASKSRC,-(SP)
   (3)  040222  010600                        MOV     SP,R0
   (4)  040224  004737  066232                JSR PC,FPRINT
11417  040230  004737  065350                 JSR PC,YORN            ;ACCEPT ASCIZ
11418  040234  000137  040254                 JMP 52$                ;(N) KW11-P @100KHZ
11419  040240  000137  040300                 JMP 53$                ;(Y) KW11-P EXT OSC
11420  040244  000137  040340                 JMP 54$                ;(R) LINE TIME CLOCK
11421  040250  000137  040364                 JMP 55$                ;(C) KW11-P @10KHZ
11422
11423  040254                           52$:                         ;MAKE KW11-P @100KHZ THE INTERRUPT SOURCE
11424  040254  004737  062420                 JSR PC,PC1CK           ;CHECK FOR (& SETUP) P-CLK 1
11425  040260  000137  040406                 JMP MNOPC1             ;NOT PRESENT ON SYSTEM RETURN
11426  040264  004737  062534                 JSR PC,PC2CK           ;P-CLK EXISTS RETURN - CHECK FOR (& SETUP) 2ND PCLK
11427                                                                 ;  FOR LATENCY TESTING
11428  040270  000137  040424                 JMP MNOPC2             ;NOT PRESENT ON SYSTEM RETURN
11429  040274  000137  040436                 JMP ADIQ               ;2ND PCLK EXISTS
11430
11431  040300                           53$:                         ;MAKE KW11-P WITH EXTERNAL OSCILLATOR THE
11432                                                                 ;  INTERRUPT SOURCE
11433  040300  004737  062420                 JSR PC,PC1CK           ;CHECK FOR (& SETUP) P-CLK ON SYSTEM
11434  040304  000137  040406                 JMP MNOPC1             ;NOT PRESENT ON SYSTEM RETURN
11435  040310  052777  000006  142206         BIS #6,@PC1CSR         ;SET PCLK 1 FOR EXTERNAL OSCILLATOR
11436  040316  004737  062534                 JSR PC,PC2CK           ;CHECK FOR 2ND P-CLK FOR LATENCY TESTING
11437  040322  000137  040424                 JMP MNOPC2             ;NOT PRESENT RETURN
11438  040326  052777  000006  142200         BIS #6,@PC2CSR         ;SET PCLK2 FOR EXTERNAL OSC
11439  040334  000137  040436                 JMP ADIQ
11440
11441  040340                           54$:                         ;MAKE LINE TIME CLOCK THE INTR SOURCE
11442  040340  004737  063212                 JSR PC,LTCP            ;CHECK FOR LTC ON SYSTEM
11443  040344  000137  040406                 JMP MNOLTC             ;NOT PRESENT RETURN
11444  040350  004737  063074                 JSR PC,LTCSUP          ;SYNC UP TO LTC
```

```
11445  040354  004737  063136                  JSR PC,LTCCNT           ;DETERMINE COUNT PER CLOCK TICK
11446  040360  000137  040502                  JMP ARMQ
11447
11448  040364                          55$:                            ;MAKE KW11-P @10KHZ THE INTERRUPT SOURCE
11449  040364  004737  062420                  JSR PC,PC1CK            ;CHECK FOR P-CLK ON SYSTEM
11450  040370  000137  040406                  JMP MNOPC1              ;NOT PRESENT RETURN
11451  040374  052777  000002  142122          BIS #2,@PC1CSR          ;SET PCLK FOR 10KHZ (NO LATENCY TESTING)
11452  040402  000137  040502                  JMP ARMQ
11453
11454  040406                          MNOLTC:
11455  040406                          MNOPC1: PRINTB #NOINT           ;PRINT CANT TEST INTERRUPTABILITY MESSAGE
   (6) 040406  012746  013405                  MOV     #NOINT,-(SP)
   (3) 040412  010600                          MOV     SP,R0
   (4) 040414  004737  066232                  JSR PC,FPRINT
11456  040420  000137  040502                  JMP ARMQ
11457  040424                          MNOPC2: PRINTB #NOLAT           ;PRINT CANT TEST LATENCY MESSAGE
   (6) 040424  012746  013334                  MOV     #NOLAT,-(SP)
   (3) 040430  010600                          MOV     SP,R0
   (4) 040432  004737  066232                  JSR PC,FPRINT
11458  040436                          ADIQ:   PRINTB #ASKDI           ;ASK IF USER ALLOWS AN INTERRUPT DURING CIS
   (6) 040436  012746  013223                  MOV     #ASKDI,-(SP)
   (3) 040442  010600                          MOV     SP,R0
   (4) 040444  004737  066232                  JSR PC,FPRINT
11459                                                                   ;  INST EXECUTED ON NORMAL INTR SERVICE ROUTINE
11460  040450  004737  065350                  JSR PC,YORN             ;ACCEPT ASCIZ FROM TTY
11461  040454  000137  040502                  JMP ARMQ                ;N RESPONSE
11462  040460  000137  040474                  JMP 1$                  ;Y RESPONSE
11463  040464  000137  040502                  JMP ARMQ                ;ILLEGAL RESPONSE
11464  040470  000137  040502                  JMP ARMQ                ;ILLEGAL RESPONSE
11465  040474  013737  001670  062012  1$:     MOV KNOP,DI             ;OVERWRITE 'RTS PC' TO ALLOW P-CLK
11466                                                                   ;  INTERRUPT DURING CIS INST EXECUTED
11467                                                                   ;  WITHIN NORMAL P-CLK INTERRUPT SERVICE ROUTINE.
11468
11469
11470
11471  040502                          ARMQ:   PRINTB #ASKRM           ;ASK IF RANDOM EXERCISE MODE IS DESIRED?
   (6) 040502  012746  012465                  MOV     #ASKRM,-(SP)
   (3) 040506  010600                          MOV     SP,R0
   (4) 040510  004737  066232                  JSR PC,FPRINT
11472  040514  004737  065350                  JSR PC,YORN             ;ACCEPT ASCIZ FROM TTY
11473  040520  000137  040556                  JMP 2$                  ;N RESPONSE
11474  040524  000137  040540                  JMP 3$                  ;Y RESPONSE
11475  040530  000137  040652                  JMP 1$                  ;R OR H RESPONSE  (ILLEGAL HERE)
11476  040534  000137  040652                  JMP 1$                  ;C RESPONSE       (ILLEGAL HERE)
11477  040540  012737  177777  001764  3$:     MOV #177777,RANDOM      ;SET RANDOM FLAG
11478  040546  012737  072776  073052          MOV #IDUM,INPTBL        ;SET INPUT TABLE POINTER TO DUMMY INPUT TABLE
11479  040554  000436                          BR 1$
11480  040556                          2$:     PRINTB #ASKMOD          ;ASK FOR PROCESSOR TEST MODE
   (6) 040556  012746  012533                  MOV     #ASKMOD,-(SP)
   (3) 040562  010600                          MOV     SP,R0
   (4) 040564  004737  066232                  JSR PC,FPRINT
11481  040570  004737  060530                  JSR PC,KSORU            ;ACCEPT ASCIZ FROM TTY AND SETUP MODE WORD
11482  040574  000770                          BR 2$                   ;ILLEGAL CHAR RETURN - ASK AGAIN
11483  040576                          20$:    PRINTB #ASKMM           ;ASK FOR MEM MGMT TEST MODE
```

```
   (6)  040576  012746  012617                      MOV     #ASKMM,-(SP)
   (3)  040602  010600                              MOV     SP,R0
   (4)  040604  004737  066232                      JSR PC,FPRINT
 11484  040610  004737  065350                      JSR PC,YORN
 11485  040614  000137  040646                      JMP 23$                 ;N RESPONSE - MEM MGMT OFF
 11486  040620  000137  040636                      JMP 22$                 ;D RESPONSE - D SPACE ENABLED
 11487  040624  000137  040652                      JMP 1$                  ;H RESPONSE - D SPACE DISABLED
 11488  040630  000137  040576                      JMP 20$                 ;ILLEGAL RESPONSE - ASK AGAIN
 11489  040634  000406                              BR 1$
 11490  040636  012737  177777  002166  22$:       MOV #177777,DEN         ;SET D ENABLED FLAG
 11491  040644  000402                              BR 1$
 11492  040646  005037  002162          23$:       CLR MMFLG               ;SET NO MEM MGMT FLAG
 11493  040652                           1$:       PRINTB  #ASK            ;ASK FOR SPECIFIC INST TO TEST
   (6)  040652  012746  012416                      MOV     #ASK,-(SP)
   (3)  040656  010600                              MOV     SP,R0
   (4)  040660  004737  066232                      JSR PC,FPRINT
 11494  040664  004737  070506                      JSR PC,ACASZ            ;ACCEPT ASCIZ FROM TTY
 11495  040670  005737  002466                      TST ACINST              ;DEFAULTED TO ALL INSTRUCTIONS?
 11496  040674  001406                              BEQ FDIALG              ;BRANCH IF YES
 11497  040676  004737  070404                      JSR PC,SFCI             ;LOOK FOR MATCH BETWEEN INST ENTERED
 11498                                               ;AND LIST OF CIS INST ASCII.
 11499  040702  000763                              BR 1$                   ;NO MATCH RETURN
 11500  040704  012737  177777  002474              MOV #177777,ONEINS      ;MATCH - SET SINGLE INST TESTING FLAG
 11502  040712  013737  073052  002140  FDIALG:    MOV INPTBL,INPTP        ;INITIALIZATION
 11503  040720  005037  001420                      CLR TOTTC               ;ZERO COUNT OF TOTAL TESTS EXECUTED
 11504  040724  005037  001416                      CLR TOTTCH
 11505  040730  005037  001422                      CLR INVTC               ;ZERO COUNT OF INVALID TESTS - TESTS ABORTED
 11506  040734  005037  001424                      CLR REDTC               ;ZERO COUNT OF REDUNDANT TESTS - TESTS ABORTED.
 11507  040740  005002                              CLR R2
 11508  040742  013737  001670  050144              MOV KNOP,PREINS         ;INSERT NOP BEFORE INST UNDER TEST.
 11509  040750  012700  120606                      MOV #XLTBL1,R0          ;INITIALIZE MOVTC TRANSLATION TABLES
 11510  040754  012701  121206                      MOV #ELTBL,R1           ;  AS FOLLOWS: 1 IN LOC 0, 2 IN LOC 1, ETC.
 11511  040760  005202                   11$:       INC R2
 11512  040762  110220                              MOVB R2,(R0)+
 11513  040764  020001                              CMP R0,R1
 11514  040766  103774                              BLO 11$
 11515  040770  005737  002100                      TST FSRUN               ;NORMAL FIELD SERVICE TYPE RUN?
 11516  040774  001426                              BEQ NITE                ;BRANCH IF NO
 11518  040776  023727  000042  053672              CMP @#42,#ENDAD         ;IF IN ACT CHAIN MODE SKIP OVER PRINTING OF HEADER
 11519  041004  001412                              BEQ 15$
 11520  041006  005737  002212                      TST QVMODE              ;IF IN QVMODE PRINT QV MODE
 11521  041012  001403                              BEQ 1$
 11522  041014  104401                              TYPE
 11523  041016  016116                              QVHDR
 11524  041020  000404                              BR 15$
 11525  041022  104401                   1$:        TYPE
 11526  041024  016004                              FSHDR                   ;PRINT FIELD SERVICE HEADER INFO
 11554  041026  104401                   10$:       TYPE                    ;PRINT PASS TIME MESSAGE
 11555  041030  016260                              FSHDR1
 11557  041032  012737  072430  002146  15$:       MOV #YL2D,EMPTR
 11559  041040  042737  000007  050164              BIC #7,TINST            ;CLEAR REGISTER FIELD (FOR L2D DISPLAY ONLY)
 11560  041046  004737  064240                      JSR PC,IDINST           ;IDENTIFY INST UNDER TEST
 11562
 11563  041052  005037  042176          NITE:      CLR MTYPE               ;CONTROL IS PASSED TO THIS POINT WHENEVER
```

```
11564                                                   ;       ALL TEST CONDITIONS FOR A GIVEN INPUT
11565                                                   ;       TABLE HAVE BEEN EXHAUSTED.  PRIOR
11566                                                   ;       TO ENTRY TO THIS POINT, THE INPUT
11567                                                   ;       TABLE POINTER (INPTP) HAS BEEN UPDATED
11568                                                   ;       TO POINT TO THE NEXT INPUT TABLE
11569                                                   ;       OF TEST CONDITIONS. IN RANDOM MODE
11570                                                   ;       CONTROL IS PASSED HERE FOLLOWING EACH TEST.
11571  041056  005037  002476          CLR PZCODE
11572  041062  005037  002460          CLR PKPTW
11573  041066  005037  002444          CLR DECINS
11574  041072  005037  002462          CLR NDESC
11575  041076  005737  001764          TST RANDOM              ;RUNNING IN RANDOM EXERCISE MODE?
11576  041102  001436                  BEQ 2$                  ;BRANCH IF NO
11577  041104  004737  063276          JSR PC,SRNGST           ;SAVE RANDOM # GENERATOR STATE AT START OF EACH TEST
11579  041110  013700  001420          MOV TOTTC,R0            ;PRINT RANDOM # GEN SEED?
11580  041114  043700  002102          BIC MSEED,R0
11581  041120  001016                  BNE 3$                  ;BRANCH IF NO
11582  041122  005737  002050          TST PROGD               ;PROGRESS DISPLAY?
11583  041126  001013                  BNE 3$                  ;BRANCH IF NO
11584  041130                          PRINTB #FORM36,RNCON,RP1,RP2    ;PRINT 3 SEED CONSTANTS
  (9)  041130  013746  064420          MOV     RP2,-(SP)
  (8)  041134  013746  064416          MOV     RP1,-(SP)
  (7)  041140  013746  064414          MOV     RNCON,-(SP)
  (6)  041144  012746  014400          MOV     #FORM36,-(SP)
  (3)  041150  010600                  MOV     SP,R0
  (4)  041152  004737  066232          JSR PC,FPRINT
11585                                                   ;NOTE: TO USE SEED, LOAD 3 CONSTANTS INTO
11586                                                   ;    KRNCON,KRP1,KRP2 THEN RESTART AT LOC 204.
11593  041156  005737  002474  3$:     TST ONEINS              ;SINGLE INST TESTING?
11594  041162  001002                  BNE 1$                  ;BRANCH IF YES
11595  041164  004737  063562          JSR PC,GENRI            ;GENERATE NEXT RANDOM CIS INST TO TEST
11596  041170  004737  063622  1$:     JSR PC,LDINPT           ;LOAD UP DUMMY INPUT TABLE USING RANDOM # GEN.
11597  041174  004737  064034          JSR PC,LDCON            ;LOAD MISCELLANEOUS CONSTANTS USING RANDOM # GEN.
11598  041200  013700  002140  2$:     MOV INPTP,R0            ;R0 POINTS TO ENTRY IN INPUT TABLE
11599  041204  016001  000002          MOV 2(R0),R1
11600  041210  042701  177776          BIC #177776,R1          ;CLEAR OUT ALL BUT TYPE BIT IN ENTRY TYPE WORD
11601  041214  006301                  ASL R1
11602  041216  062701  001426          ADD #ITYPE,R1
11603  041222  000171  000000          JMP @(R1)               ;DISPATCH ON INPUT TABLE ENTRY TYPE
11604
11605  041226          TYPE0:                                  ;INPUT PARAMETERS FULLY SPECIFIED IN INPUT TABLE ENTRY
11606  041226  012737  177777  042176  MOV #177777,MTYPE       ;SET TYPE FLAG TO INDICATE TYPE 0 ENTRY
11607  041234  010001                  MOV R0,R1               ;SETUP PARAMETER TABLE POINTERS
11608  041236  062701  000004          ADD #4,R1               ;R1 POINTS TO IP1
11609  041242  012702  001570          MOV #PTP01,R2           ;R2 POINTS TO TOP OF PARAMETER TABLE POINTER LIST
11610  041246  010122  1$:     MOV R1,(R2)+            ;LOAD PTP
11611  041250  062701  000002          ADD #2,R1
11612  041254  022702  001636          CMP #PTP24,R2           ;ALL PTP'S LOADED
11613  041260  103372                  BHIS 1$                 ;BRANCH IF NO
11614
11615  041262  005037  042200  2$:     CLR ID1
11616  041266  005037  042202          CLR ID2
11617  041272  011001                  MOV (R0),R1             ;UPDATE PTP CONTENTS FOR INDIRECTLY
11618  041274  006301                  ASL R1                  ;  SPECIFIED DATA DESCRIPTORS.
```

```
11619  041276  062701  004370                  ADD #INSTID,R1
11620  041302  111137  042200                  MOVB (R1),ID1
11621  041306  005201                          INC R1
11622  041310  111137  042202                  MOVB (R1),ID2          ;ID1 AND ID2 CONTAIN OFFSETS INTO PTP TABLE
11623  041314  005737  042200                  TST ID1
11624  041320  001445                          BEQ LDCOD              ;BRANCH IF OFFSET = 0. NO UPDATE REQUIRED
11625  041322  006337  042200                  ASL ID1
11626  041326  062737  001566  042200          ADD #PTP,ID1           ;USE OFFSET TO GET PTP ENTRY
11627  041334  017701  000640                  MOV @ID1,R1            ;USE ENTRY TO GET ADDRESS OF DATA DESCRIPTOR
11628  041340  011177  000634                  MOV (R1),@ID1
11629  041344  005737  042202                  TST ID2
11630  041350  001431                          BEQ LDCOD              ;BRANCH IF SECOND OFFSET = 0
11631  041352  006337  042202                  ASL ID2
11632  041356  062737  001566  042202          ADD #PTP,ID2           ;HANDLE SECOND OFFSET SAME AS FIRST
11633  041364  017701  000612                  MOV @ID2,R1
11634  041370  011177  000606                  MOV (R1),@ID2
11635  041374  000417                          BR LDCOD
11636
11637  041376                          TYPE1:                         ;INPUT PARAMETERS SPECIFIED IN TABLES
11638  041376  010001                          MOV R0,R1              ;SETUP PARAMETER TABLE POINTERS
11639  041400  062701  000004                  ADD #4,R1              ;R1 POINTS TO IP1
11640  041404  012702  001570                  MOV #PTP01,R2          ;R2 POINTS TO TOP OF PARAMETER TABLE POINTER (PTP) LIST.
11641  041410  012112                  1$:     MOV (R1)+,(R2)         ;LOAD PTP FROM IP
11642  041412  005712                          TST (R2)               ;PTP=0 ?
11643  041414  001402                          BEQ 2$                 ;YES - DON'T ADVANCE IT
11644  041416  062712  000002                  ADD #2,(R2)            ;ADVANCE PTP TO FIRST ENTRY
11645  041422  062702  000002          2$:     ADD #2,R2              ;UPDATE POINTER
11646  041426  020227  001640                  CMP R2,#PTP24+2        ;ALL PTP'S LOADED?
11647  041432  002766                          BLT 1$                 ;NO
11648
11649  041434  011001                  LDCOD:  MOV (R0),R1            ;LOAD OCTAL CODING FOR CIS INST
11650  041436  010137  002302                  MOV R1,OCTIC           ;  UNDER TEST INTO EINST & TINST
11651  041442  010137  002136                  MOV R1,FATAL           ;LOAD CODING FOR INST UNDER TEST INTO FATAL
11652                                           ;  ERROR INDICATOR WORD
11653  041446  006301                          ASL R1
11654  041450  062701  003732                  ADD #OINST,R1
11655  041454  011137  046310                  MOV (R1),EINSTR
11656  041460  011137  050164                  MOV (R1),TINST
11657  041464  004737  063442                  JSR PC,SRNGSW          ;SAVE STATE OF RANDOM # GEN. AS STATE W
11658
11659  041470  004737  063466          NTC:    JSR PC,RRNGSW          ;CONTROL IS PASSED TO THIS POINT TO EXECUTE
11660                                           ;       NEXT TEST CONDITION FOR GIVEN INPUT
11661                                           ;       TABLE. PARAMETER TABLE POINTERS
11662                                           ;       HAVE BEEN UPDATED TO POINT TO NEXT
11663                                           ;       TEST CONDITION PRIOR TO ENTRY
11664                                           ;       TO THIS POINT.
11665                                           ;RESTORE RANDOM # GEN  TO STATE W.
11666  041474  013701  002302                  MOV OCTIC,R1           ;LOAD # OF INST DESC INTO NDESC
11667  041500  006301                          ASL R1                 ;LOAD DATA TYPE CONTROL WORDS
11668  041502  006301                          ASL R1                 ;   PKPTW,ZPM,SXTYPE
11669  041504  063701  004266                  ADD DECTYP,R1
11670  041510  012137  002304                  MOV (R1)+,TW1
11671  041514  113737  002304  002460          MOVB TW1,PKPTW         ;PKPTW IDENTIFIES STARTING DATA TYPE FOR EACH INST TESTI
11672  041522  113737  002305  002462          MOVB TW1+1,NDESC
```

```
11673  041530  011137  002306                      MOV (R1),TW2
11674  041534  113701  002306                      MOVB TW2,R1
11675  041540  042701  177770                      BIC #177770,R1
11676  041544  010137  002446                      MOV R1,S1TYPE          ;S1TYPE IDENTIFIES 1ST STRING DESC DATA TYPE
11677  041550  113701  002306                      MOVB TW2,R1
11678  041554  042701  177707                      BIC #177707,R1
11679  041560  006201                              ASR R1
11680  041562  006201                              ASR R1
11681  041564  006201                              ASR R1
11682  041566  010137  002450                      MOV R1,S2TYPE
11683  041572  113701  002306                      MOVB TW2,R1
11684  041576  006301                              ASL R1
11685  041600  006301                              ASL R1
11686  041602  000301                              SWAB R1
11687  041604  010137  002452                      MOV R1,S3TYPE
11688  041610  113701  002307                      MOVB TW2+1,R1
11689  041614  006201                              ASR R1
11690  041616  010137  002464                      MOV R1,ZPM
11691  041622  005737  001764                      TST RANDOM             ;IN RANDOM EXERCISE MODE?
11692  041626  001447                              BEQ NTCTS              ;BRANCH IF NO
11693  041630  023727  002446  000006              CMP S1TYPE,#6          ;RANDOMIZE STRING DATA TYPES
11694  041636  103405                              BLO 1$
11695  041640  004737  064266                      JSR PC,RPTYPE          ;GET A RANDOM PACKED DATA TYPE
11696  041644  010037  002446                      MOV R0,S1TYPE          ;STORE IT IN S1TYPE
11697  041650  000404                              BR 2$
11698  041652  004737  064314          1$:         JSR PC,RZTYPE          ;GET A RANDOM ZONED DATA TYPE
11699  041656  010037  002446                      MOV R0,S1TYPE          ;STORE IT IN S1TYPE
11700  041662  023727  002450  000006  2$:         CMP S2TYPE,#6
11701  041670  103405                              BLO 3$
11702  041672  004737  064266                      JSR PC,RPTYPE
11703  041676  010037  002450                      MOV R0,S2TYPE
11704  041702  000404                              BR 4$
11705  041704  004737  064314          3$:         JSR PC,RZTYPE
11706  041710  010037  002450                      MOV R0,S2TYPE
11707  041714  023727  002452  000006  4$:         CMP S3TYPE,#6
11708  041722  103405                              BLO 5$
11709  041724  004737  064266                      JSR PC,RPTYPE
11710  041730  010037  002452                      MOV R0,S3TYPE
11711  041734  000404                              BR NTCTS
11712  041736  004737  064314          5$:         JSR PC,RZTYPE
11713  041742  010037  002452                      MOV R0,S3TYPE
11714
11715  041746                          NTCTS:                             ;CONTROL IS PASSED TO THIS POINT TO EXECUTE
11716                                                                     ;       THE GIVEN TEST CONDITION USING
11717                                                                     ;       THE NEXT DATA TYPE.
11718  041746  005237  001120                      INC $TESTN             ;INCREMENT TEST # IN APT MAILBOX
11719  041752  005737  001764                      TST RANDOM             ;RUNNING IN RANDOM MODE?
11720  041756  001410                              BEQ 2$                 ;BRANCH IF NO
11721  041760  023737  001120  001652              CMP $TESTN,TPERP       ;HAS TEST # REACHED MAX PER APT PASS?
11722  041766  101404                              BLOS 2$                ;BRANCH IF NO
11723  041770  005237  001122                      INC $PASS              ;INCREMENT APT PASS COUNTER
11724  041774  005037  001120                      CLR $TESTN
11725  042000  005237  001420          2$:         INC TOTTC              ;UPDATE TESTS EXECUTED COUNTER
11726  042004  001002                              BNE 1$                 ;BRANCH IF TEST COUNT NOT = ZERO
```

```
11727  042006  005237  001416                    INC TOTTCH              ;INCREMENT TEST COUNT OVERFLOW EVERY TIME
11728                                                                     ;  TEST COUNT (TOTTC) EXCEEDS 177777 OCTAL.
11729  042012  013777  001420  137720  1$:       MOV TOTTC,@DISPLAY      ;SET TEST # INTO DISPLAY LIGHTS
11730  042020  004737  063372                    JSR PC,SRNGSY           ;SAVE STATE OF RANDOM # GEN AS STATE Y.
11731
11732  042024                            RTC:                            ;CONTROL IS PASSED TO THIS  POINT TO REPEAT
11733                                                                     ;       THE PREVIOUS TEST USING THE SAME
11734                                                                     ;       TEST CONDITION & DATA TYPES.
11735                                                                     ;SETUP MICRO BREAK REG (11/74)
11736  042024  000240                           NOP                     ;(11/74 MICROBREAK - REPLACE WITH 013737)
11737  042026  000240                           NOP                     ;(  ''          ''          ''      '' 177570)
11738  042030  000240                           NOP                     ;(  ''          ''          ''      '' 177770)
11739  042032  004737  063416                   JSR PC,RRNGSY           ;RESTORE RANDOM # GEN TO STATE Y.
11740  042036  005037  002144                   CLR SPHAND              ;CLEAR SPECIAL HANDLING REQUESTS
11741  042042  005037  002300                   CLR FILLS2
11742  042046  012737  111111  120400           MOV #111111,PRECSK      ;INITIALIZE STACK OVERFLOW CONSTANTS
11743  042054  012737  111111  120602           MOV #111111,PSTCSK
11744  042062  005037  002156                   CLR ERRSTK              ;CLEAR STACK ERROR FLAG.
11745  042066  012700  120402                   MOV #PRECSK+2,R0        ;INITIALIZE  STACK CONTENTS BEFORE EACH TEST
11746  042072  020027  120602           1$:     CMP R0,#PSTCSK
11747  042076  001403                           BEQ 2$
11748  042100  012720  055555                   MOV #055555,(R0)+
11749  042104  000772                           BR 1$
11750  042106  013700  002140           2$:     MOV INPTP,R0            ;R0 POINTS TO ENTRY IN INPUT TABLE
11751  042112  011001                           MOV (R0),R1             ;SETUP POINTER TO PROPER CIS
11752  042114  006301                           ASL R1                  ;  INSTRUCTION FLOW TABLE
11753  042116  062701  001436                   ADD #INO,R1
11754  042122  011137  001746                   MOV (R1),FLOPTR
11755  042126  011001                           MOV(R0),R1              ;SETUP POINTER TO PROPER ERROR
11756  042130  006301                           ASL R1                  ; MESSAGE HEADER
11757  042132  062701  070704                   ADD #INEM,R1
11758  042136  011137  002146                   MOV (R1),EMPTR
11759
11760  042142                            XINST:
11761  042142  017701  137600                   MOV @FLOPTR,R1          ;GET NEXT ENTRY FROM INST. FLOW TABLE
11762  042146  006101                           ROL R1
11763  042150  006101                           ROL R1
11764  042152  006101                           ROL R1
11765  042154  006101                           ROL R1
11766  042156  006101                           ROL R1
11767  042160  042701  177760                   BIC #177760,R1          ;LOOK ONLY AT FLOW TABLE ENTRY COMMAND
11768  042164  006301                           ASL R1                  ;  FORM INDEX INTO FLOW DISPATCH TABLE
11769  042166  062701  001526                   ADD #FLODIS,R1
11770  042172  000171  000000                   JMP @(R1)               ;DISPATCH ON FLOW COMMAND
11771  042176  000000                    MTYPE: .WORD 0
11772  042200  000000                    ID1:   .WORD 0
11773  042202  000000                    ID2:   .WORD 0
11774
11775  042204  005737  002100           CTLC:   TST FSRUN               ;DVT TYPE RUN?
11776  042210  001006                           BNE NOCTC               ;BRANCH IF NO
11777  042212  000137  037276                   JMP DVTST               ;RESTART DVT TYPE RUN
11778
11779
11780  042216                            FC01:                           ;FLOW COMMAND = 01 - COPY TEST OPERAND
```

```
11781
11782  042216  004737  064056                      JSR PC,EXTBR            ;  FROM PARAMETER TABLE INTO TRN.
11783  042222  000137  042204                      JMP CTLC                ;HANDLE OPERATOR REQUESTS
11784  042226  032737  000100  050164  NOCTC:      BIT #100,TINST          ;       ;CNTL C RETURN FROM SUBROUTIINE.
11785  042234  001067                              BNE FCRTN               ;THE IN-LINE TEST CASE ALWAYS FOLLOWS THE SAME
11786                                                                       ;REG TEST CASE - THEREFORE DO NOT REFILL THE TRNS
11787                                                                       ; BECAUSE SXTYPES ARE ALREADY UPDATED FOR NEXT REG
11788  042236  004737  054036                      JSR PC,PF1              ; TEST CONDITION.
11789                                                                       ;FORM PARAMETER TABLE POINTER FROM
11790  042242  004737  054252                      JSR PC,RF4              ;  PF1 FIELD OF FLOW TABLE ENTRY
11791                                                                       ;FORM TEST OPERAND POINTER FROM RF4 FIELD
11792  042246  017711  137670                      MOV @PTPTR,(R1)         ;  OF FLOW TABLE ENTRY.
11793  042252  010102                              MOV R1,R2               ;COPY TEST OPERAND FROM PARAMETER TABLE
11794  042254  004737  054234                      JSR PC,RF3X
11795  042260  005701                              TST R1                  ;LOAD R1 WITH TWICE CONTENTS OF RF3 FIELD OF
11796  042262  001454                              BEQ FCRTN               ;  FLOW TABLE ENTRY
11797  042264  012737  177777  002444              MOV #177777,DECINS      ;BRANCH IF FIELD CONTAINS ZERO
11798  042272  020127  000002                      CMP R1,#2               ;SET FLAG TO INDICATE THAT INST IS A DECIMAL INST.
11799                                                                       ;IS TEST OPERAND PART OF 1ST DECIMAL DESC
11800  042276  001013                              BNE 1$                  ;  OPERAND FOR INST?
11801  042300  013704  002446                      MOV S1TYPE,R4           ;BRANCH IF NO
11802  042304  006304                              ASL R4
11803  042306  006304                              ASL R4
11804  042310  006304                              ASL R4
11805  042312  006304                              ASL R4
11806  042314  000304                              SWAB R4
11807  042316  042704  107777                      BIC #107777,R4
11808  042322  050412                              BIS R4,(R2)             ;'OR' SRC1 TYPE FIELD INTO TEST OPERAND
11809  042324  000433                              BR FCRTN
11810  042326  020127  000004          1$:         CMP R1,#4               ;IS TEST OPERAND PART OF 2ND DECIMAL DESC
11811                                                                       ;  OPERAND FOR INST?
11812  042332  001013                              BNE 2$                  ;BRANCH IF NO
11813  042334  013704  002450                      MOV S2TYPE,R4
11814  042340  006304                              ASL R4
11815  042342  006304                              ASL R4
11816  042344  006304                              ASL R4
11817  042346  006304                              ASL R4
11818  042350  000304                              SWAB R4
11819  042352  042704  107777                      BIC #107777,R4
11820  042356  050412                              BIS R4,(R2)             ;'OR' SRC2 TYPE FIELD INTO TEST OPERAND
11821  042360  000415                              BR FCRTN
11822  042362  020127  000006          2$:         CMP R1,#6               ;IS TEST OPERAND PART OF 3RD DECIMAL DESC
11823                                                                       ;  OPERAND FOR INST?
11824  042366  001012                              BNE FCRTN               ;BRANCH IF NO
11825  042370  013704  002452                      MOV S3TYPE,R4
11826  042374  006304                              ASL R4
11827  042376  006304                              ASL R4
11828  042400  006304                              ASL R4
11829  042402  006304                              ASL R4
11830  042404  000304                              SWAB R4
11831  042406  042704  107777                      BIC #107777,R4          ;'OR' DST TYPE FIELD INTO TEST OPERAND
11832  042412  050412                              BIS R4,(R2)
11833
11834  042414  062737  000002  001746  FCRTN:      ADD #2,FLOPTR           ;UPDATE FLOW TABLE POINTER TO NEXT COMMAND
```

```
11835  042422  000137  042142                  JMP XINST
11836
11837  042426                          FC02:
11838
11839  042426  032737  000100  050164          BIT #100,TINST          ;SKIP THIS FLOW COMMAND FOR INLINE CASE
11840  042434  001367                          BNE FCRTN
11841  042436  005737  042176                  TST MTYPE
11842  042442  001410                          BEQ 1$                  ;BRANCH IF NOT TYPE 0 ENTRY
11843  042444  004737  054036                  JSR PC,PF1              ;FORM PARAMETER TABLE POINTER FROM
11844                                                                  ;  PF1 FIELD OF FLOW TABLE ENTRY.
11845  042450  004737  054252                  JSR PC,RF4              ;FORM TEST OPERAND POINTER FROM
11846                                                                  ;  RF4 FIELD OF FLOW TABLE ENTRY
11847  042454  017711  137462                  MOV @PTPTR,(R1)         ;COPY TEST OPERAND FROM PARAMETER TABLE
11848  042460  000137  042414                  JMP FCRTN
11849  042464  004737  054036          1$:     JSR PC,PF1              ;FORM PARAMETER TABLE POINTER FROM PF1
11850                                                                  ;  FIELD OF FLOW TABLE ENTRY.
11851  042470  004777  137446                  JSR PC,@PTPTR           ;EXECUTE PARAMETER TABLE ENTRY TO
11852                                                                  ;  GENERATE TEST OPERAND.
11853  042474  000137  042414                  JMP FCRTN
11854
11855  042500  005237  001424          REDNTC: INC REDTC               ;TEST CONDITION REDUNDANT - ABORT TEST.
11856  042504  005737  001420                  TST TOTTC               ;DID TEST COUNT OVERFLOW ON LAST INCREMENT?
11857  042510  001002                          BNE 1$                  ;BRANCH IF NO
11858  042512  005337  001416                  DEC TOTTCH
11859  042516  005337  001420          1$:     DEC TOTTC
11860  042522  000137  053122                  JMP NXTTC
11861
11862  042526                          FC03:                           ;FLOW COMMAND = 03 - VERIFY THAT STRING'S
11863                                                                  ;  LOWER ADDRESS LIMIT FALLS WITHIN TEST BUFFER.
11864  042526  032737  000100  050164          BIT #100,TINST          ;SKIP THIS FLOW COMMAND FOR INLINE CASE
11865  042534  001327                          BNE FCRTN
11866  042536  032737  000010  002144          BIT #10,SPHAND          ;SPECIAL HANDLING REQUEST?
11867  042544  001323                          BNE FCRTN               ;SKIP THIS FLOW COMMAND IF YES.
11868  042546  004737  054036                  JSR PC,PF1              ;FORM PARAMETER TABLE POINTER TO STRING
11869                                                                  ;  SURROUND LENGTH FROM PF1 FIELD OF FLOW
11870                                                                  ;  TABLE ENTRY.
11871  042552  004737  054252                  JSR PC,RF4              ;FORM TEST OPERAND POINTER TO STRING.ADR FROM
11872                                                                  ;  RF4 FIELD OF FLOW TABLE ENTRY
11873  042556  011101                          MOV (R1),R1
11874  042560  167701  137356                  SUB @PTPTR,R1           ;SUBTRACT STRING.SURR.LEN FROM STRING.ADR
11875                                                                  ;  TO GET STRING.SURR.ADR.
11876  042564  020127  000020                  CMP R1,#20
11877  042570  002475                          BLT NXTC                ;STRING.SURR.ADR < 20  -SKIP THIS TEST CONDITION
11878                                                                  ;  (20 ALLOWS SPACE FOR IN-LINE DESCRIPTORS AT BEGINNING
11879  042572  000137  042414                  JMP FCRTN
11880
11881  042576                          FC04:                           ;FLOW COMMAND = 04 - VERIFY THAT STRINGS
11882                                                                  ;  UPPER ADDRESS LIMIT FALLS WITHIN TEST
11883                                                                  ;  BUFFER.
11884  042576  032737  000100  050164          BIT #100,TINST          ;SKIP THIS FLOW COMMAND FOR INLINE CASE
11885  042604  001035                          BNE 1$
11886  042606  032737  000001  002144          BIT #1,SPHAND           ;SPECIAL HANDLING REQUEST
11887  042614  001031                          BNE 1$                  ;SKIP VERIFICATION IF YES
11888  042616  004737  054036                  JSR PC,PF1              ;FORM PARAMETER TABLE POINTER TO STRING.SURR.LEN
```

```
11889
11890  042622  004737  054222                  JSR PC,RF3              ;  FROM PF1 FIELD OF FLOW TABLE ENTRY
                                                                        ;FORM TEST OPERAND POINTER TO STRING.LEN
11891                                                                   ;  FROM RF3 FIELD OF FLOW TABLE ENTRY
11892  042626  011101                          MOV (R1),R1
11893  042630  005737  002444                  TST DECINS              ;IS INST A DECIMAL INST?
11894  042634  001402                          BEQ 2$                  ;BRANCH IF NO
11895  042636  043701  002454                  BIC TYPFLD,R1           ;CLEAR TYPE FIELD SO AS NOT TO
11896                                                                   ;  DISTORT UPPER ADDRESS CALCULATION.
11897  042642  017702  137274          2$:     MOV @PTPTR,R2
11898  042646  060102                          ADD R1,R2               ;R2 NOW CONTAINS SUM OF STRING.SURR.LEN
11899                                                                   ;  AND STRING.LEN
11900  042650  004737  054252                  JSR PC,RF4              ;FORM TEST OPERAND POINTER TO STRING.ADR
11901                                                                   ;  FROM RF4 FIELD OF FLOW TABLE ENTRY.
11902  042654  061102                          ADD (R1),R2             ;R2 NOW CONTAINS STRING.ADR + STRING.LEN
11903                                                                   ;  + STRING.SURR.ADR
11904  042656  005737  001764                  TST RANDOM              ;RANDOM EXERCISE MODE?
11905  042662  001403                          BEQ 3$                  ;BRANCH IF NO.
11906  042664  020237  001644                  CMP R2,RTBLEN           ;COMPARE ADDRESS WITH END OF RANDOM TEST BUFFER
11907  042670  000402                          BR 4$
11908  042672  020237  001642          3$:     CMP R2,TBLEN            ;DOES THIS ADDRESS EXCEED TEST BUFFER
11909                                                                   ;  LENGTH ?
11910  042676  003032                  4$:     BGT NXTC                ;YES - SKIP THIS TEST CONDITION
11911  042700  000137  042414          1$:     JMP FCRTN
11912
11913  042704                          FC05:                           ;FLOW COMMAND = 05 - ADJUST TEST OPERANDS
11914                                                                   ;  TO INCLUDE BASE ADDRESS OF TEST BUFFER.
11915  042704  032737  000100  050164          BIT #100,TINST          ;SKIP THIS FLOW COMMAND FOR INLINE CASE
11916  042712  001022                          BNE EC05
11917  042714  004737  054134                  JSR PC,RF1              ;FORM 1ST TEST OPERAND POINTER FROM RF1
11918                                                                   ;  FIELD OF FLOW TABLE ENTRY
11919  042720  063711  001640                  ADD TBADR,(R1)          ;ADD TEST BUFFER BASE ADDRESS TO OPERAND
11920  042724  004737  054166                  JSR PC,RF2              ;FORM 2ND TEST OPERAND POINTER FROM RF2
11921                                                                   ;  FIELD OF FLOW TABLE ENTRY
11922  042730  020127  003634                  CMP R1,#TRN             ;IF R1 STILL POINTS TO #TRN THEN THERE WAS
11923                                                                   ;  ONLY ONE TEST OPERAND TO BE UPDATED
11924  042734  001411                          BEQ EC05                ;UPDATING COMPLETE
11925  042736  063711  001640                  ADD TBADR,(R1)          ;ADD TEST BUFFER BASE ADDRESS TO OPERAND
11926  042742  004737  054222                  JSR PC,RF3              ;FORM 3RD TEST OPERAND POINTER FROM RF3
11927                                                                   ;  FIELD OF FLOW TABLE ENTRY.
11928  042746  020127  003634                  CMP R1,#TRN             ;WAS THERE A THIRD ENTRY?
11929  042752  001402                          BEQ EC05                ;NO - UPDATING COMPLETE
11930  042754  063711  001640                  ADD TBADR,(R1)          ;ADD TEST BUFFER BASE ADDRESS TO OPERAND
11931  042760  000137  042414          EC05:   JMP FCRTN
11932
11933  042764  005237  001422          NXTC:   INC INVTC               ;TEST CONDITION INVALID - ABORT TEST
11934  042770  005737  001420                  TST TOTTC               ;DID TEST COUNT OVERFLOW ON LAST INCREMENT?
11935  042774  001002                          BNE 1$                  ;BRANCH IF NO
11936  042776  005337  001416                  DEC TOTTCH
11937  043002  005337  001420          1$:     DEC TOTTC
11938  043006  000137  053122                  JMP NXTTC
11939
11940  043012                          FC06:                           ;FLOW COMMAND = 06 - INITIALIZE TEST BUFFER
11941                                                                   ;  TO AND INCREMENTING SEQUENCE.
11942  043012  032737  000100  050164          BIT #100,TINST
```

```
11943  043020  001402                          BEQ 4$
11944  043022  004737  063536                  JSR PC,RRNGSV       ;RESTORE RANDOM # GEN TO STATE V
11945  043026  004737  063512          4$:     JSR PC,SRNGSV       ;SAVE RANDOM # GENERATOR STATE AS STATE V
11946  043032  013737  001640  001760          MOV TBADR,TBEND
11947  043040  005737  001764                  TST RANDOM          ;RANDOM EXERCISE MODE?
11948  043044  001404                          BEQ 2$              ;BRANCH IF NC
11949  043046  063737  001644  001760          ADD RTBLEN,TBEND    ;THE BUFFER SIZE FOR RANDOM EXERCISE MODE
11950                                          ;  IS FIXED
11951  043054  000403                          BR 3$
11952  043056  063737  001642  001760  2$:     ADD TBLEN,TBEND     ;SETUP A POINTER TO END OF BUFFER
11953  043064  013701  001640          3$:     MOV TBADR,R1
11954  043070  013702  001640                  MOV TBADR,R2        ;POINT R1 & R2 TO START OF BUFFER
11955  043074  013721  001660                  MOV INCSQ1,(R1)+
11956  043100  013721  001662                  MOV INCSQ2,(R1)+    ;LOAD THE FIRST TWO BUFFER LOCATIONS
11957  043104  012211                  1$:     MOV (R2)+,(R1)
11958  043106  061221                          ADD (R2),(R1)+      ;CONTENTS OF NEXT LOC = SUM OF CONTENTS
11959                                          ;  OF PREVIOUS 2 LOCATIONS.
11960  043110  023701  001760                  CMP TBEND,R1
11961  043114  003373                          BGT 1$
11962  043116  000137  042414                  JMP FCRTN
```

```
11964  043122                          FC07:                   ;FLOW COMMAND = 07 - INSERT STRING IN
11965                                                          ;  TEST BUFFER.
11966  043122  005037  002502                  CLR SAVSRF
11967  043126  005737  001764                  TST RANDOM      ;RANDOM EXERCISE MODE?
11968  043132  001406                          BEQ 1$          ;BRANCH IF NO
11969  043134  023727  002302  000011          CMP OCTIC,#11   ;IS INST A CHAR STRING INST?
11970  043142  101002                          BHI 1$          ;BRANCH IF NO
11971  043144  000137  042414          2$:     JMP FCRTN       ;IN RANDOM MODE, NO CHAR STRINGS NEED TO BE
11972                                                          ;  INSERTED FOR CHAR TYPE INSTRUCTIONS.
11973                                                          ;  RANDOM CHAR BYTES ARE DERIVED BY
11974                                                          ;  RANDOMIZING THE 'SEED' CONSTANTS USED
11975                                                          ;  TO INITIALIZE THE ENTIRE BUFFER.
11976  043150  032737  000020  002144  1$:     BIT #20,SPHAND  ;SPECIAL HANDLING REQUEST?
11977  043156  001372                          BNE 2$          ;SKIP INSERTING STRINGS IF YES
11978  043160  004737  054036                  JSR PC,PF1      ;FORM PARAMETER TABLE POINTER TO STRING
11979                                                          ;  DESCRIPTOR FROM PF1 FIELD OF FLOW TABLE ENTRY
11980  043164  004737  054222                  JSR PC,RF3      ;FORM TEST OPERAND POINTER TO STRING.LEN
11981                                                          ;  FROM RF3 FIELD OF FLOW TABLE ENTRY
11982  043170  010137  002110                  MOV R1,TRL      ;SAVE POINTER
11983  043174  004737  054252                  JSR PC,RF4      ;FORM TEST OPERAND POINTER TO STRING.ADR
11984                                                          ;  FROM RF4 FIELD OF FLOW
11985                                                          ;  TABLE ENTRY.
11986  043200  010137  002106                  MOV R1,TRA      ;SAVE POINTER
11987  043204  004737  063322                  JSR PC,SRNGSX   ;SAVE RANDOM NUMBER GEN. STATE X
11988  043210  004537  043476                  JSR R5,ISTG     ;INSERT STRING IN TEST BUFFER
11989  043214  002142                          PTPTR           ;POINTER TO STRING DESCRIPTOR
11990  043216  002110                          TRL             ;POINTER TO STRING.LEN
11991  043220  002106                          TRA             ;POINTER TO STRING.ADR
11992
11993  043222  005737  002502                  TST SAVSRF      ;SAVE STRING FOR ERROR PRINTOUT?
11994  043226  001436                          BEQ A3X
11995  043230  004737  054036                  JSR PC,PF1      ;YES - RESTORE POINTER TO STRING DESCRIPTOR
11996  043234  004737  054222                  JSR PC,RF3      ;RESTORE POINTER TO STRING LENGTH
11997  043240  010137  002110                  MOV R1,TRL
11998  043244  005737  002300                  TST FILLS2      ;WHERE SHOULD STRING BE STORED?
11999  043250  001406                          BEQ 4$
12000  043252  012737  002512  002500          MOV #INSRC2+2,SAVPTR  ;STORE STRING IN BUFSR2
12001  043260  011137  002510                  MOV (R1),INSRC2 ;SAVE STRING LEN IN BUFFER DESCRIPTOR
12002  043264  000410                          BR 5$
12003  043266  012737  002506  002500  4$:     MOV #INSRC1+2,SAVPTR  ;SAVE STRING IN BUFSR1
12004  043274  012737  177777  002300          MOV #177777,FILLS2  ;SIGNAL THAT BUFSR1 IS OCCUPIED.
12005  043302  011137  002504                  MOV (R1),INSRC1 ;SAVE STRING LEN IN BUFFER DESCRIPTOR
12006  043306  004737  063346          5$:     JSR PC,RRNGSX   ;RESTORE RANDOM NUMBER GEN TO STATE X.
12007  043312  004537  043476                  JSR R5,ISTG     ;INSERT STRING IN SAVE BUFFER
12008  043316  002142                          PTPTR           ;POINTER TO STRING DESCRIPTOR
12009  043320  002110                          TRL             ;POINTER TO STRING LEN
12010  043322  002500                          SAVPTR          ;POINTER TO STRING ADDRESS (EITHER BUFSR1 OR BUFSR2)
12011
12012  043324  062737  000002  001746  A3X:     ADD #2,FLOPTR   ;LOOK AT NEXT FLOW COMMAND?
12013  043332  017701  136410                  MOV @FLOPTR,R1
12014  043336  042701  017777                  BIC #017777,R1
12015  043342  005701                          TST R1          ;IS IT = 0 - A CONTINUATION OF THE 07
12016                                                          ;  COMMAND?
12017  043344  001050                          BNE 2$          ;NO - DON'T INSERT SURROUND STRINGS
```

```
12018  043346  004737  054036                    JSR PC,PF1              ;YES - FORM PARAMETER TABLE POINTER
12019                                                                     ;  TO STRING.SURR.LEN
12020  043352  013737  002142  002052            MOV PTPTR,SURLEN
12021  043360  004737  054110                    JSR PC,PF2              ;FORM PARAMETER TABLE POINTER TO SURR DATA
12022                                                                     ;  DESCRIPTOR
12023  043364  017737  136520  002110            MOV @TRL,TRL            ;FORM SURR.ADR (UPPER PORTION)
12024  043372  005737  002444                    TST DECINS              ;INST = DECIMAL?
12025  043376  001403                            BEQ 3$                  ;BRANCH IF NO
12026  043400  042737  070000  002110            BIC #070000,TRL         ;CLEAR TYPE FIELD FROM STRING LENGTH
12027  043406  067737  136474  002110  3$:       ADD @TRA,TRL            ;SURR.ADR = STRING.ADR + STRING.LEN
12028  043414  012737  002110  002054            MOV #TRL,SURADR
12029  043422  004537  043476                    JSR R5,ISTG             ;INSERT UPPER HALF OF SURR STRING
12030  043426  002142                            PTPTR                   ;POINTER TO SURR.DATA DESCRIPTOR
12031  043430  002052                            SURLEN                  ;POINTER TO SURR.LEN
12032  043432  002054                            SURADR                  ;POINTER TO SURR.ADR
12033  043434  017737  136446  002110            MOV @TRA,TRL            ;FORM SURR STRING ADDRESS (LOWER PORTION)
12034  043442  167737  136404  002110            SUB @SURLEN,TRL         ;SURR.ADR = STRING.ADR - SURR.LEN
12035  043450  004537  043476                    JSR R5,ISTG             ;INSERT LOWER HALF OF SURR STRING
12036  043454  002142                            PTPTR
12037  043456  002052                            SURLEN
12038  043460  002054                            SURADR
12039  043462  000137  042414          1$:       JMP FCRTN
12040  043466  162737  000002  001746  2$:       SUB #2,FLOPTR           ;RESTORE FLOW COMMAND POINTER
12041  043474  000772                            BR 1$
12042
12043  043476                          ISTG:                             ;SUBROUTINE TO INSERT STRING IN TEST BUFFER.
12044  043476  013501                            MOV @(R5)+,R1
12045  043500  012137  002112                    MOV (R1)+,STGDS1        ;GET STRING DATA DESCRIPTOR
12046  043504  011137  002114                    MOV (R1),STGDS2
12047  043510  013501                            MOV @(R5)+,R1           ;GET STRING.LEN
12048  043512  011137  002116                    MOV (R1),STGLN
12049  043516  032737  000002  002144            BIT #2,SPHAND           ;SPECIAL HANDLING REQUEST?
12050  043524  001403                            BEQ 1$                  ;BRANCH IF NO
12051  043526  042737  100000  002116            BIC #100000,STGLN       ;YES - STRIP BIT 15 FROM LENGTH
12052  043534  013501                  1$:       MOV @(R5)+,R1           ;SETUP STRING STARTING ADDRESS
12053  043536  011137  002120                    MOV (R1),STGAD
12054  043542  013701  002112                    MOV STGDS1,R1
12055  043546  042737  160000  002112            BIC #160000,STGDS1      ;STRIP OFF 'TYPE' FROM 1ST WORD OF DATA DESCRIPTOR
12056  043554  042701  017777                    BIC #17777,R1           ;LOOK ONLY AT DESCRIPTOR TYPE
12057  043560  005701                            TST R1
12058  043562  001431                            BEQ DSTYP0              ;DATA DESCRIPTOR IS TYPE 0.
12059  043564  022701  020000                    CMP #020000,R1
12060  043570  001450                            BEQ DSTYP1              ;DATA DESCRIPTOR IS TYPE 1
12061  043572  022701  040000                    CMP #040000,R1
12062  043576  001464                            BEQ DSTYP2              ;DATA DESCRIPTOR IS TYPE 2
12063  043600  022701  060000                    CMP #060000,R1
12064  043604  001521                            BEQ DSTYP3              ;DATA DESCRIPTOR IS TYPE 3
12065  043606  022701  100000                    CMP #100000,R1          ;
12066  043612  001407                            BEQ 2$                  ;DATA DESCRIPTOR IS TYPE 4
12067  043614  022701  120000                    CMP #120000,R1
12068  043620  001410                            BEQ 3$                  ;DATA DESCRIPTOR IS TYPE 5
12069  043622  012737  000001  001114            MOV #1,$MSGTY           ;TELL APT THERE IS A FATAL ERROR          ;;REV-C
12070  043630  000000                            HALT                    ;**DATA DESCRIPTOR NOT TYPE 0 ,1,2,3,4, OR 5.
12071  043632  005037  001774          2$:       CLR RANDTA
```

```
12072  043636  000137  044746                  JMP DSTYP4
12073  043642  000137  046014          3$:     JMP DSTYP5
12074
12075  043646                          DSTYP0:                 ;ALL BYTES OF STRING ARE IDENTICAL
12076  043646  005737  002444                  TST DECINS      ;INST = DECIMAL?
12077  043652  001403                          BEQ 3$          ;BRANCH IF NO
12078  043654  042737  070000  002116          BIC #070000,STGLN ;CLEAR TYPE FIELD STRING LENGTH WORD
12079  043662  013701  002120          3$:     MOV STGAD,R1    ;R1 CONTAINS STRING STARTING ADDRESS
12080  043666  005737  002116          1$:     TST STGLN       ;ENTIRE STRING BEEN INSERTED?
12081  043672  001405                          BEQ 2$          ;YES
12082  043674  113721  002112                  MOVB STGDS1,(R1)+ ;NO - MOVE STRING DATA BYTE INTO NEXT
12083                                                          ;  TEST BUFFER LOCATION
12084  043700  005337  002116                  DEC STGLN
12085  043704  000770                          BR 1$
12086  043706  000137  046112          2$:     JMP EISTG
12087
12088  043712                          DSTYP1:                 ;STRING BYTE N = STRING BYTE N-1 + INC.
12089  043712  013701  002120                  MOV STGAD,R1    ;R1 CONTAINS STRING STARTING ADDRESS
12090  043716  005737  002116          1$:     TST STGLN       ;ENTIRE STRING BEEN INSERTED?
12091  043722  001410                          BEQ 2$          ;YES
12092  043724  113721  002114                  MOVB STGDS2,(R1)+
12093  043730  063737  002112  002114          ADD STGDS1,STGDS2 ;NO FORM AND INSERT NEXT STRING BYTE
12094  043736  005337  002116                  DEC STGLN
12095  043742  000765                          BR 1$
12096  043744  000137  046112          2$:     JMP EISTG
12097
12098  043750                          DSTYP2:                 ;INSERT BYTES FROM GIVEN STRING
12099  043750  013701  002120                  MOV STGAD,R1    ;SET R1 TO STARTING ADDRESS OF STRING TO BE
12100                                                          ;  FORMED IN TEST BUFFER.
12101  043754  005737  002112                  TST STGDS1      ;IS GIVEN STRING LENGTH = 0?
12102  043760  001431                          BEQ 3$          ;YES - DON'T DO ANY INSERTING
12103  043762  013737  002112  002122          MOV STGDS1,SAVSL ;NO - SAVE STRING LENGTH IN CASE STRING
12104  043770  013737  002114  002124          MOV STGDS2,SAVSA ;  TO BE FORMED IS LONGER THAN GIVEN STRING.
12105  043776  005737  002116          1$:     TST STGLN       ;ENTIRE STRING BEEN INSERTED?
12106  044002  001420                          BEQ 3$          ;YES
12107  044004  117721  136104                  MOVB @STGDS2,(R1)+ ;NO - INSERT STRING BYTE FROM GIVEN STRING
12108  044010  005237  002114                  INC STGDS2      ;UPDATE GIVEN STRING ADDRESS TO NEXT BYTE
12109  044014  005337  002112                  DEC STGDS1
12110  044020  001006                          BNE 2$          ;ALL BYTES IN GIVEN STRING USED?
12111  044022  013737  002122  002112          MOV SAVSL,STGDS1 ;YES - STRING BEING FORMED IS LONGER THAN
12112  044030  013737  002124  002114          MOV SAVSA,STGDS2 ;  GIVEN STRING. RESET STRING ADDRESS
12113                                                          ;  BACK TO BEGINNING OF GIVEN STRING.
12114  044036  005337  002116          2$:     DEC STGLN       ;DECREMENT COUNT OF # OF CHARACTERS YET
12115                                                          ;  TO BE INSERTED.
12116  044042  000755                          BR 1$
12117  044044  000137  046112          3$:     JMP EISTG
12118
12119  044050                          DSTYP3:                 ;DECIMAL STRING - ALL DIGITS IDENTICAL
12120  044050  022737  010000  002112          CMP #10000,STGDS1 ;IS FORMED STRING TO BE PACKED OR ZONED DECIMAL?
12121  044056  101070                          BHI PTYP3P
12122  044060                          TYP3Z:                  ;ZONED
12123  044060  013701  002116                  MOV STGLN,R1    ;GET STRING DESC. TYPE FIELD
12124  044064  000301                          SWAB R1
12125  044066  006201                          ASR R1
```

```
12126  044070  006201                          ASR R1
12127  044072  006201                          ASR R1
12128  044074  006201                          ASR R1
12129  044076  042701  177770                  BIC #177770,R1
12130  044102  010137  002314                  MOV R1,STGTYP          ;SAVE TYPE
12131  044106  042737  177740  002116          BIC #177740,STGLN      ;STRIP TYPE OFF STRING LENGTH WORD
12132  044114  013737  002112  002130          MOV STGDS1,SIGN        ;STRIP OFF SIGN FROM DATA DESCRIPTOR WORD 1
12133  044122  042737  177760  002130          BIC #177760,SIGN
12134  044130  006237  002112                  ASR STGDS1             ;GET AND RIGHT ADJUST ZONED DATA BYTE
12135  044134  006237  002112                  ASR STGDS1
12136  044140  006237  002112                  ASR STGDS1
12137  044144  006237  002112                  ASR STGDS1
12138  044150  042737  177400  002112          BIC #177400,STGDS1     ;GOT ZONED DATA BYTE (HIGH NIBBLE & DIGIT)
12139                                          ;  RIGHT ADJUSTED IN STGDS1.
12140  044156  013702  002112                  MOV STGDS1,R2
12141  044162  042702  177760                  BIC #177760,R2
12142  044166  010237  002312                  MOV R2,STGDIG          ;SAVE JUST THE DIGIT IN STGDIG
12143  044172  005737  002116                  TST STGLN              ;STRING TO BE FORMED HAVE 0 LENGTH?
12144  044176  001535                          BEQ TFS                ;YES - NOTE: A ZERO LENGTH ZONED
12145                                          ;  STRING OCCUPIES NO MEMORY (ESCEPT SEPARATE TYPES).
12146  044200  013701  002120                  MOV STGAD,R1           ;SET R1 TO STARTING ADDRESS OF STRING
12147                                          ;  TO BE FORMED IN TEST BUFFER.
12148  044204  113721  002112          1$:     MOVB STGDS1,(R1)+      ;NO - INSERT NEXT ZONED DATA BYTE.
12149  044210  005337  002116                  DEC STGLN
12150  044214  005737  002116                  TST STGLN              ;ENTIRE STRING BEEN INSERTED?
12151  044220  001371                          BNE 1$                 ;NO
12152  044222  013702  002314                  MOV STGTYP,R2          ;YES - INSERT SIGN BYTE
12153  044226  006302                          ASL R2
12154  044230  062702  002316                  ADD #TYPTAB,R2
12155  044234  000172  000000                  JMP @(R2)              ;VECTOR TO APPROPRIATE STRING TYPE ROUTINE
12156                                          ;  TO ENTER SIGN BYTE.
12157
12158  044240  000137  044526          PTYP3P: JMP TYP3P
12159
12160  044244  142741  000360          TYPSZ:  BICB #360,-(R1)        ;SIGNED ZONED
12161                                          ;CLEAR OUT THE HIGH NIBBLE OF LEAST
12162                                          ;  SIGNIFICANT STRING BYTE.
12163  044250  006337  002130                  ASL SIGN
12164  044254  006337  002130                  ASL SIGN
12165  044260  006337  002130                  ASL SIGN
12166  044264  006337  002130                  ASL SIGN
12167  044270  153711  002130                  BISB SIGN,(R1)         ;'OR' IN SIGN
12168  044274  000512                          BR EXTYP
12169  044276  000511                  TYPUZ:  BR EXTYP               ;UNSIGNED ZONED - NO ACTION REQUIRED
12170
12171  044300                          TYPTO:                         ;TRAILING OVERPUNCHED
12172  044300  022737  000003  002130          CMP #3,SIGN            ;IS SIGN = +?
12173  044306  001416                          BEQ 1$                 ;BRANCH IF YES
12174  044310  004737  064334                  JSR PC,RN              ;RANDOMLY SELECT FROM 2 NEGATIVE SIGN TABLES
12175  044314  032700  000001                  BIT #1,R0
12176  044320  001403                          BEQ 3$
12177  044322  012702  002352                  MOV #NEGTB1,R2
12178  044326  000402                          BR 2$
12179  044330  012702  002340          3$:     MOV #NEGTAB,R2         ;SIGN IS NEGATIVE
```

```
12180  044334  063702  002312          2$:     ADD STGDIG,R2
12181  044340  111241                          MOVB (R2),-(R1)         ;COPY ENCODED SIGN FROM TABLE INTO STRING
12182  044342  000467                          BR EXTYP
12183  044344  004737  064334          1$:     JSR PC,RN               ;RANDOMLY SELECT FROM 3 POSITIVE SIGN TABLES.
12184  044350  032700  000001                  BIT #1,R0
12185  044354  001403                          BEQ 4$
12186  044356  012702  002376                  MOV #POSTB1,R2
12187  044362  000764                          BR 2$
12188  044364  032700  000002          4$:     BIT #2,R0
12189  044370  001403                          BEQ 5$
12190  044372  012702  002410                  MOV #POSTB2,R2
12191  044376  000756                          BR 2$
12192  044400  012702  002364          5$:     MOV #POSTAB,R2
12193  044404  000753                          BR 2$
12194
12195  044406                          TYPLO:                          ;LEADING OVERPUNCHED
12196  044406  013701  002120                  MOV STGAD,R1            ;SETUP POINTER TO MOST SIGN. BYTE OF STRING
12197  044412  005201                          INC R1
12198  044414  000731                          BR TYPTO
12199
12200  044416                          TYPTS:                          ;TRAILING SEPARATE
12201  044416  022737  000003  002130          CMP #3,SIGN             ;IS SIGN +
12202  044424  001403                          BEQ 1$                  ;BRANCH IF YES
12203  044426  112711  000055                  MOVB #055,(R1)          ;SIGN = -; COPY SIGN BYTE INTO STRING
12204  044432  000433                          BR EXTYP
12205  044434  004737  064334          1$:     JSR PC,RN               ;RANDOMLY SELECT BETWEEN 2 POSITIVE SEPARATE SIGNS.
12206  044440  032700  000001                  BIT #1,R0
12207  044444  001403                          BEQ 2$
12208  044446  112711  000040                  MOVB #040,(R1)
12209  044452  000423                          BR EXTYP
12210  044454  112711  000053          2$:     MOVB #053,(R1)          ;SIGN = +; COPY SIGN BYTE INTO BYTE STRING
12211  044460  000420                          BR EXTYP
12212
12213  044462                          TYPLS:                          ;LEADING SEPARATE
12214  044462  013701  002120                  MOV STGAD,R1            ;SETUP POINTER TO BYTE BEFORE MOST SIGN.
12215                                                                  ;  DIGIT OF STRING.
12216  044466  005301                          DEC R1
12217  044470  000752                          BR TYPTS
12218
12219  044472                          TFS:                            ;0 LENGTH STRING
12220  044472  022737  000005  002314          CMP #5,STGTYP           ;IS STRING TYPE = LEADING SEPARATE?
12221  044500  001001                          BNE 1$                  ;BRANCH IF NO
12222  044502  000767                          BR TYPLS                ;INSERT SIGN AT 'A-1'
12223  044504  022737  000004  002314  1$:     CMP #4,STGTYP           ;IS STRING TYPE = TRAILING SEPARATE
12224  044512  001003                          BNE EXTYP               ;BRANCH IF NO
12225  044514  013701  002120                  MOV STGAD,R1            ;INSERT SIGN AT  'A'
12226  044520  000736                          BR TYPTS
12227  044522  000137  046112          EXTYP:  JMP EISTG
12228
12229  044526                          TYP3P:                          ;PACKED
12230  044526  013701  002116                  MOV STGLN,R1            ;GET STRING DESC. TYPE FIELD
12231  044532  000301                          SWAB R1
12232  044534  006201                          ASR R1
12233  044536  006201                          ASR R1
```

```
12234  044540  006201                          ASR R1
12235  044542  006201                          ASR R1
12236  044544  042701  177770                  BIC #177770,R1
12237  044550  010137  002314                  MOV R1,STGTYP          ;SAVE TYPE
12238  044554  042737  177740  002116          BIC #177740,STGLN      ;STRIP TYPE OFF STRING LENGTH WORD
12239  044562  113737  002112  002130          MOVB STGDS1,SIGN       ;LOAD SIGN WITH DIGIT-SIGN BYTE
12240  044570  113701  002112                  MOVB STGDS1,R1         ;FORM DIGIT-DIGIT BYTE
12241  044574  006201                          ASR R1                 ;RIGHT ADJUST DIGIT
12242  044576  006201                          ASR R1
12243  044600  006201                          ASR R1
12244  044602  006201                          ASR R1
12245  044604  042701  177760                  BIC #177760,R1         ;CLEAR OUT ALL BUT DIGIT
12246  044610  042737  177417  002112          BIC #177417,STGDS1     ;CLEAR OUT ALL BUT DIGIT IN DATA DESCRIPTOR WORD 1
12247  044616  050137  002112                  BIS R1,STGDS1          ;STGDS1 NOW CONTAINS DIGIT-DIGIT BYTE
12248  044622  110137  002114                  MOVB R1,STGDS2         ;SAVE 0000-DIGIT BYTE IN CASE STRING LENGTH
12249                                                                 ;  IS EVEN - I.E. MOST SIGNIF DIGIT BYTE CONTAINS
12250                                                                 ;  ONLY A SINGLE DIGIT.
12251  044626  013701  002120                  MOV STGAD,R1           ;SET R1 TO STARTING ADDRESS OF STRING
12252                                                                 ;  TO BE FORMED IN TEST BUFFER.
12253  044632  005737  002116                  TST STGLN              ;STRING TO BE FORMED HAVE ZERO LENGTH?
12254  044636  001004                          BNE 3$                 ;NO
12255  044640  042737  177760  002130          BIC #177760,SIGN       ;YES - INSERT SIGN. NOTE: A ZERO LENGTH
12256  044646  000424                          BR INSIGN              ;  PACKED STRING OCCUPIES 1 BYTE.
12257  044650  013737  002116  002122  3$:     MOV STGLN,SAVSL        ;STRING TO BE FORMED HAVE EVEN LENGTH?
12258  044656  042737  177776  002122          BIC #177776,SAVSL
12259  044664  001003                          BNE 1$
12260  044666  113721  002114                  MOVB STGDS2,(R1)+      ;YES - INSERT 0000-DIGIT BYTE
12261  044672  000404                          BR 2$
12262  044674  113721  002112          1$:     MOVB STGDS1,(R1)+      ;INSERT NEXT PACKED DATA BYTE
12263  044700  005337  002116                  DEC STGLN
12264  044704  005337  002116          2$:     DEC STGLN
12265  044710  005737  002116                  TST STGLN              ;ENTIRE STRING BEEN INSERTED?
12266  044714  003367                          BGT 1$                 ;NO - CONTINUE INSERTING
12267  044716  005301                          DEC R1                 ;YES - BACKUP
12268  044720  022737  000007  002314  INSIGN: CMP #7,STGTYP          ;IS STRING TYPE UNSIGNED?
12269  044726  001003                          BNE 1$                 ;BRANCH IF NO
12270  044730  052737  000017  002130          BIS #17,SIGN           ;UNSIGNED PACKED STRING SIGN MUST = (1111)
12271  044736  113711  002130          1$:     MOVB SIGN,(R1)         ;INSERT SIGN
12272  044742  000137  046112                  JMP EISTG
12273
12274  044746                          DSTYP4:                        ;DECIMAL STRING - USER DEFINED DIGIT STRING
12275  044746  032737  000002  002464          BIT #2,ZPM             ;IS FORMED STRING TO BE PACKED OR ZONED
12276  044754  001002                          BNE TYP4Z              ;BRANCH IF ZONED
12277  044756  000137  045466                  JMP TYP4P
12278
12279  044762                          TYP4Z:                         ;ZONED
12280  044762  013701  002116                  MOV STGLN,R1           ;GET STRING DESC. TYPE FIELD
12281  044766  000301                          SWAB R1
12282  044770  006201                          ASR R1
12283  044772  006201                          ASR R1
12284  044774  006201                          ASR R1
12285  044776  006201                          ASR R1
12286  045000  042701  177770                  BIC #177770,R1
12287  045004  010137  002314                  MOV R1,STGTYP          ;SAVE TYPE
```

```
12288  045010  042737  177740  002116          BIC #177740,STGLN       ;STRIP TYPE OFF STRING LENGTH WORD
12289  045016  042737  010000  002112          BIC #10000,STGDS1       ;STRIP OFF ALL BUT LENGTH
12290  045024  013701  002120                  MOV STGAD,R1            ;INSERTION IS DONE FROM LS TO MS DIGIT
12291  045030  063701  002116                  ADD STGLN,R1            ;FORM IN R1 ADDRESS WHERE FIRST BYTE IS TO BE INSERTED
12292  045034  010137  002442                  MOV R1,ONEBEY           ;SAVE PTR TO 1 BYTE BEYOND LS END OF STRING
12293  045040  013737  002114  002124          MOV STGDS2,SAVSA        ;SAVE GIVEN STRING DESCRIPTOR WORDS
12294  045046  013737  002112  002122          MOV STGDS1,SAVSL        ;
12295  045054  063737  002112  002114          ADD STGDS1,STGDS2       ;FORM IN STGDS2 ADDRESS WHERE FIRST BYTE IS TO BE
12296                                                                  ;  TAKEN FROM
12297  045062  005337  002114                  DEC STGDS2
12298  045066  005737  001774                  TST RANDTA              ;USE RANDOM SIGN?
12299  045072  001403                          BEQ 4$
12300  045074  004737  045326                  JSR PC,GETSGN           ;YES
12301  045100  000416                          BR 5$
12302  045102  117737  135006  002130  4$:     MOVB @STGDS2,SIGN
12303  045110  006237  002130                  ASR SIGN
12304  045114  006237  002130                  ASR SIGN
12305  045120  006237  002130                  ASR SIGN
12306  045124  006237  002130                  ASR SIGN
12307  045130  042737  177760  002130          BIC #177760,SIGN
12308  045136  005737  002116          5$:     TST STGLN               ;STRING TO BE FORMED HAVE 0 LENGTH?
12309  045142  001002                          BNE 1$                  ;BRANCH IF NO
12310  045144  000137  044472                  JMP TFS
12311  045150  005737  002116          1$:     TST STGLN               ;ENTIRE STRING BEEN INSERTED?
12312  045154  001432                          BEQ WONSGN              ;BRANCH IF YES
12313  045156  005737  001774                  TST RANDTA              ;USE RANDOM DATA?
12314  045162  001404                          BEQ 3$                  ;BRANCH IF NO
12315  045164  004737  046026                  JSR PC,GRZDB            ;GENERATE IN R0 A RANDOM ZONED DATA BYTE
12316  045170  110041                          MOVB R0,-(R1)           ;INSERT BYTE
12317  045172  000420                          BR 2$
12318  045174  117741  134714          3$:     MOVB @STGDS2,-(R1)      ;INSERT NEXT BYTE
12319  045200  005337  002114                  DEC STGDS2              ;UPDATE POINTERS
12320  045204  005337  002112                  DEC STGDS1
12321  045210  001011                          BNE 2$                  ;GIVEN STRING EXHAUSTED? BRANCH IF NO
12322  045212  013737  002122  002112          MOV SAVSL,STGDS1        ;RESET POINTERS BACK TO BEGINNING OF GIVEN STRING
12323  045220  013737  002124  002114          MOV SAVSA,STGDS2
12324  045226  063737  002112  002114          ADD STGDS1,STGDS2
12325  045234  005337  002116          2$:     DEC STGLN               ;DECREMENT COUNT OF # OF DIGITS TO BE INSERTED
12326  045240  000743                          BR 1$                   ;RETURN
12327  045242  013702  002314          WONSGN: MOV STGTYP,R2           ;WORK ON INSERTING SIGN BYTE
12328  045246  006302                          ASL R2
12329  045250  062702  002422                  ADD #PTYPTA,R2
12330  045254  000172  000000                  JMP @(R2)
12331
12332  045260                          PTYPTO:                         ;FIX UP POINTERS TO ENABLE USE OF
12333                                                                  ;  TYP3Z ROUTINES.
12334  045260  013701  002442                  MOV ONEBEY,R1           ;GET LEAST SIGN DIGIT
12335  045264  114101                          MOVB -(R1),R1
12336  045266  042701  177760          PTO:    BIC #177760,R1
12337  045272  010137  002312                  MOV R1,STGDIG           ;SAVE IN STGDIG
12338  045276  004737  045326                  JSR PC,GETSGN
12339  045302  013701  002442                  MOV ONEBEY,R1           ;SETUP R1 TO ONE BYTE BEYOND STRING
12340  045306  023727  002314  000002          CMP STGTYP,#2
12341  045314  001402                          BEQ 1$
```

```
12342  045316  000137  044406                  JMP TYPLO
12343  045322  000137  044300          1$:     JMP TYPTO
12344
12345  045326  005737  001774          GETSGN: TST RANDTA              ;USE RANDOM SIGN?
12346  045332  001415                          BEQ 1$                  ;BRANCH IF NO
12347  045334  004737  064334                  JSR PC,RN               ;GET A RANDOM #
12348  045340  032700  000001                  BIT #1,R0               ;USE LEAST SIGN BIT TO  PICK A SIGN
12349  045344  001404                          BEQ 2$
12350  045346  012737  000007  002130          MOV #7,SIGN             ;LS BIT = 1; MAKE SIGN NEG.
12351  045354  000417                          BR 3$
12352  045356  012737  000003  002130  2$:     MOV #3,SIGN             ;LS BIT = 0;MAKE SIGN POS.
12353  045364  000413                          BR 3$
12354  045366  013701  002442          1$:     MOV ONEBEY,R1           ;SUBROUTINE TO GET SIGN FROM INSERTED STRING
12355  045372  114101                          MOVB -(R1),R1
12356  045374  042701  177417                  BIC #177417,R1
12357  045400  006201                          ASR R1
12358  045402  006201                          ASR R1                  ;RIGHT ADJUST
12359  045404  006201                          ASR R1
12360  045406  006201                          ASR R1
12361  045410  010137  002130                  MOV R1,SIGN             ;SAVE SIGN IN 'SIGN'
12362  045414  000207          3$:     RTS PC
12363
12364  045416                  PTYPSZ:                                 ;INSERT SIGN TYPE SIGN
12365  045416  013701  002442                  MOV ONEBEY,R1
12366  045422  000137  044244                  JMP TYPSZ
12367
12368  045426                  PTYPLO:                                 ;INSERT LEADING OVERPUNCH SIGN
12369  045426  117701  134466                  MOVB @STGAD,R1          ;GET MOST SIGN. DIGIT
12370  045432  000137  045266                  JMP PTO
12371
12372  045436                  PTYPTS:                                 ;INSERT TRAILING SEPARATE SIGN
12373  045436  004737  045326                  JSR PC,GETSGN           ;GET SIGN TO INSERT
12374  045442  013701  002442                  MOV ONEBEY,R1
12375  045446  000137  044416                  JMP TYPTS
12376
12377  045452                  PTYPLS:                                 ;INSERT LEADING SEPARATE SIGN
12378  045452  004737  045326                  JSR PC,GETSGN
12379  045456  013701  002442                  MOV ONEBEY,R1
12380  045462  000137  044462                  JMP TYPLS
12381
12382  045466  013701  002116          TYP4P:  MOV STGLN,R1            ;GET STRING DESC. TYPE FIELD
12383  045472  000301                          SWAB R1
12384  045474  006201                          ASR R1
12385  045476  006201                          ASR R1
12386  045500  006201                          ASR R1
12387  045502  006201                          ASR R1
12388  045504  042701  177770                  BIC #177770,R1
12389  045510  010137  002314                  MOV R1,STGTYP           ;SAVE TYPE
12390  045514  042737  177740  002116          BIC #177740,STGLN       ;STRIP TYPE OFF STRING LENGTH WORD
12391  045522  013737  002116  002126          MOV STGLN,SAVSGL        ;PACKED - SAVE STRING LENGTH
12392  045530  006237  002116                  ASR STGLN               ;INSERTION IS DONE FROM LS TO MS DIGIT
12393  045534  013701  002116                  MOV STGLN,R1            ;FORM IN R1 ADDRESS WHERE 1ST BYTE IS TO BE INSERTED
12394  045540  063701  002120                  ADD STGAD,R1
12395  045544  006237  002112                  ASR STGDS1
```

```
12396  045550  013737  002112  002122          MOV STGDS1,SAVSL
12397  045556  013737  002114  002124          MOV STGDS2,SAVSA        ;SAVE GIVEN STRING DESCRIPTOR WORDS
12398  045564  063737  002112  002114          ADD STGDS1,STGDS2       ;FORM IN STGDS2 ADDRESS WHERE 1ST BYTE
12399  045572  005201                          INC R1                  ;IS TO BE TAKEN FROM
12400  045574  005737  002116          1$:     TST STGLN               ;ENTIRE STRING BEEN INSERTED?
12401  045600  100432                          BMI 3$                  ;BRANCH IF YES
12402  045602  005737  001774                  TST RANDTA              ;USE RANDOM DATA?
12403  045606  001404                          BEQ 5$                  ;BRANCH IF NO
12404  045610  004737  046072                  JSR PC,GRPDB            ;GENERATE IN R0 A RANDOM PACKED DATA BYTE
12405  045614  110041                          MOVB R0,-(R1)           ;INSERT BYTE
12406  045616  000420                          BR 2$
12407  045620  117741  134270          5$:     MOVB @STGDS2,-(R1)      ;INSERT NEXT BYTE
12408  045624  005337  002114                  DEC STGDS2
12409  045630  005337  002112                  DEC STGDS1              ;UPDATE  POINTERS
12410  045634  002011                          BGE 2$                  ;GIVEN STRING EXHAUSTED? BRANCH IF NO
12411  045636  013737  002122  002112          MOV SAVSL,STGDS1        ;RESET POINTERS BACK TO BEGINNING OF GIVEN STRING
12412  045644  013737  002124  002114          MOV SAVSA,STGDS2
12413  045652  063737  002112  002114          ADD STGDS1,STGDS2
12414  045660  005337  002116          2$:     DEC STGLN               ;DECREMENT COUNT OF # OF BYTES TO BE IBSERTED
12415  045664  000743                          BR 1$
12416  045666  032737  000001  002126  3$:     BIT #1,SAVSGL           ;IS STRING LENGTH ODD?
12417  045674  001002                          BNE 4$                  ;BRANCH IF YES - DONE
12418  045676  142721  000360                  BICB #360,(R1)+         ;ZERO NIBBLE IN MOST SIGN BYTE
12419  045702  013701  002126          4$:     MOV SAVSGL,R1           ;CALCULATE SIGN ADDRESS
12420  045706  006201                          ASR R1
12421  045710  063701  002120                  ADD STGAD,R1
12422  045714  022737  000007  002314          CMP #7,STGTYP           ;IS STRING TYPE UNSIGNED?
12423  045722  001431                          BEQ 6$                  ;BRANCH IF YES
12424  045724  005737  001774                  TST RANDTA              ;USE RANDOM SIGN?
12425  045730  001470                          BEQ EISTG               ;BRANCH IF NO
12426  045732  142711  000017                  BICB #17,(R1)           ;CLEAR OUT FOR SIGN
12427  045736  004737  064334                  JSR PC,RN
12428  045742  032700  000001                  BIT #1,R0
12429  045746  001403                          BEQ 7$
12430  045750  152711  000013                  BISB #13,(R1)           ;MAKE SIGN NEGATIVE
12431  045754  000456                          BR EISTG
12432  045756  032700  000002          7$:     BIT #2,R0
12433  045762  001403                          BEQ 10$
12434  045764  152711  000016                  BISB #16,(R1)           ;MAKE SIGN +
12435  045770  000450                          BR EISTG
12436  045772  032700  000004          10$:    BIT #4,R0
12437  045776  001403                          BEQ 6$
12438  046000  152711  000012                  BISB #12,(R1)           ;MAKE SIGN +
12439  046004  000442                          BR EISTG
12440  046006  152711  000017          6$:     BISB #17,(R1)           ;OVERWRITE SIGN TO (1111)
12441  046012  000437                          BR EISTG
12442
12443  046014                          DSTYP5:                         ;DECIMAL STRING - RANDOM DATA & SIGN
12444  046014  012737  177777  001774          MOV #177777,RANDTA      ;SET RANDOM DATA FLAG
12445  046022  000137  044746                  JMP DSTYP4              ;USE DSTYP4 ROUTINES.
12446
12447  046026                          GRZDB:                          ;SUBROUTINE TO GENERATE A RANDOM ZONED
12448                                                                  ;DATA BYTE IN R0.
12449  046026  004737  064334                  JSR PC,RN               ;GET A RANDOM #.
```

```
12450  046032  042700  177740                BIC #BS128,R0          ;STRIP OFF ALL BUT LS NIBBLE
12451  046036  020027  000011                CMP R0,#11             ;VALID NIBBLE = 0 TO 11.
12452  046042  101402                        BLOS    1$             ;BRANCH IF NIBBLE IS VALID
12453  046044  042700  000010                BIC #10,R0             ;CONVERT INVALID NIBBLE TO A VALID ONE
12454  046050  010037  002000        1$:     MOV R0,RNIB            ;SAVE NIBBLE
12455  046054  004737  064334                JSR PC,RN              ;GET ANOTHER RANDOM #
12456  046060  043700  001772                BIC ZMSK,R0            ;MASK OFF ALL BUT ZONE FIELD
12457  046064  053700  002000                BIS RNIB,R0            ;OR -,IN THE DECIMAL NIBBLE
12458  046070  000207                        RTS PC                 ;RETURN WITH ZONED DATA BYTE IN R0
12459
12460  046072                        GRPDB:                         ;SUBROUTINE TO GENERATE A RANDOM PACKED
12461                                                               ;DATA BYTE IN R0.
12462  046072  004737  046026                JSR PC,GRZDB           ;GET A RANDOM ZONED DATA BYTE
12463  046076  020027  000231                CMP R0,#231            ;HIGH NIBBLE MUST BE <=9
12464  046102  101402                        BLOS    1$             ;BRANCH IF VALID
12465  046104  042700  000200                BIC #200,R0            ;CONVERT TO VALID
12466  046110  000207                1$:     RTS PC
12467  046112  000205                EISTG:  RTS R5
12468
```

```
12470  046114                          FC10:                ;FLOW COMMAND = 10 - COPY TEST BUFFER INTO
12471                                                       ;  EMULATION BUFFER
12472  046114  032737  000100  050164        BIT #100,TINST ;THE IN-LINE TEST CASE ALWAYS FOLLOWS
12473                                                       ; THE SAME REGISTER TEST CASE - THEREFORE
12474                                                       ; THEIR IS NO NEED TO REEMULATE.
12475  046122  001010                BNE 2$
12476  046124  013701  001640        MOV TBADR,R1         ;R1 POINTS TO START OF TEST BUFFER
12477  046130  013702  001646        MOV EBADR,R2         ;R2 POINTS TO START OF EMULATION BUFFER
12478  046134  012122          1$:   MOV (R1)+,(R2)+      ;COPY NEXT WORD
12479  046136  023701  001760        CMP TBEND,R1         ;COPY COMPLETE ?
12480  046142  003374                BGT 1$               ;NO
12481  046144  000137  042414  2$:   JMP FCRTN            ;YES
12482
12483  046150                          FC11:                ;FLOW COMMAND = 11 - SETUP EMULATION
12484                                                       ;  OPERANDS IN ER0 - ER5 AND EMULATE
12485                                                       ;  THE CIS INSTRUCTION UNDER TEST.
12486  046150  032737  000100  050164        BIT #100,TINST ;THE IN-LINE TEST CASE ALWAYS FOLLOWS THE SAME
12487                                                       ; REGISTER TEST CASE - THEREFORE THEIR IS NO
12488                                                       ; NEED TO REEMULATE.
12489  046156  001060                BNE FINEM
12490  046160  013737  003634  003674        MOV TR0,ER0  ;COPY ERN DIRECTLY FROM TRN
12491  046166  013737  003636  003676        MOV TR1,ER1
12492  046174  013737  003640  003700        MOV TR2,ER2
12493  046202  013737  003642  003702        MOV TR3,ER3
12494  046210  013737  003644  003704        MOV TR4,ER4
12495  046216  013737  003646  003706        MOV TR5,ER5
12496  046224  013737  003650  003710        MOV TR6,ER6
12497
12498                                                       ;ADJUST ERN SPECIFIED IN FLOW TABLE ENTRY
12499                                                       ;  TO ACCOUNT FOR EMULATION VERSUS TEST
12500                                                       ;  BUFFER STARTING ADDRESS
12501  046232  004737  054134        JSR PC,RF1           ;FORM POINTER TO FIRST TEST OPERAND TO
12502                                                       ;  BE ADJUSTED.
12503  046236  020127  003634        CMP R1,#TRN          ;ANY OPERANDS TO BE ADJUSTED?
12504  046242  001420                BEQ EC11             ;BRANCH IF NO.
12505  046244  004737  046324        JSR PC,ADJEOP        ;ADJUST OPERAND
12506  046250  004737  054166        JSR PC,RF2           ;FORM POINTER TO SECOND TEST OPERAND TO
12507                                                       ;  BE ADJUSTED.
12508  046254  020127  003634        CMP R1,#TRN          ;IF R1 STILL POINTS TO #TRN THEN THERE
12509                                                       ;  WAS ONLY ONE OPERAND TO BE ADJUSTED.
12510  046260  001411                BEQ EC11             ;ADJUSTING COMPLETE
12511  046262  004737  046324        JSR PC,ADJEOP        ;ADJUST NEXT EMULATION OPERAND
12512  046266  004737  054222        JSR PC,RF3           ;FORM POINTER TO THIRD TEST OPERAND TO
12513                                                       ;  BE ADJUSTED.
12514  046272  020127  003634        CMP R1,#TRN          ;WAS THERE A THIRD OPERAND TO BE ADJUSTED?
12515  046276  001402                BEQ EC11             ;NO - ADJUSTING COMPLETE
12516  046300  004737  046324        JSR PC,ADJEOP        ;YES - ADJUST IT.
12517
12518  046304                          EC11:                ;EMULATION OPERANDS ALL SET.
12519                                                       ;EMULATE CIS INST.
12520  046304  004737  017230        JSR PC,EMULATE       ;CALL EMULATOR
12521  046310  000000          EINSTR: 0                    ;INSTRUCTION
12522  046312  003674                ERN                  ;POINTER TO REGISTER OPERANDS
12523  046314  003712                ERNR                 ;POINTER TO REGISTER RESULTS
```

```
12524  046316  003730                          ECCR                    ;POINTER TO COND. CODE RESULTS
12525  046320  000137  042414          FINEM:  JMP FCRTN
12526
12527  046324                          ADJEOP:                         ;SUBROUTINE TO UPDATE EMULATION OPERANDS
12528                                                                  ;  TO REFLECT EMULATION BUFFER STARTING ADDRESS.
12529  046324  162701  003634                  SUB #TRN,R1
12530  046330  062701  003674                  ADD #ERN,R1             ;POINT R1 TO EMULATION OPERAND RATHER THAN
12531                                                                  ;  TEST OPERAND.
12532  046334  163711  001640                  SUB TBADR,(R1)          ;SUBTRACT OUT TEST BUFFER STARTING ADDRESS
12533  046340  063711  001646                  ADD EBADR,(R1)          ;ADD IN EMULATION BUFFER STARTING ADDRESS
12534  046344  000207                          RTS PC
12535
12536  046346                          FC12:                           ;FLOW COMMAND = 12 - SETUP REGISTERS (OR INLINE POINTERS
12537                                                                  ;  AND COND CODES AND EXECUTE CIS INSTRUCTION.
12538                                                                  ;  SAVE RESULTS.
12539  046346  013737  003634  002240          MOV TR0,TTR0            ;SAVE TRNS IN TEMPORARY STORAGE
12540  046354  013737  003636  002242          MOV TR1,TTR1
12541  046362  013737  003640  002244          MOV TR2,TTR2
12542  046370  013737  003642  002246          MOV TR3,TTR3
12543  046376  013737  003644  002250          MOV TR4,TTR4
12544  046404  013737  003646  002252          MOV TR5,TTR5
12545  046412  032737  000100  050164          BIT #100,TINST          ;INST TYPE (REG OR IN-LINE)?
12546  046420  001014                          BNE INLINE              ;BRANCH IF INLINE TYPE
12547  046422  023727  050164  076027          CMP TINST,#76027
12548  046430  001406                          BEQ NONOP
12549  046432  023727  050164  076067          CMP TINST,#76067
12550  046440  001402                          BEQ NONOP
12551  046442  000137  047276                  JMP REGOP
12552  046446  000137  047342          NONOP:  JMP LTSTOP
12553  046452  004737  054146          INLINE: JSR PC,RF1X             ;GET # OF IN-LINE DESCRIPTOR POINTERS
12554  046456  006201                          ASR R1
12555  046460  012702  000005                  MOV #5,R2               ;CALCULATE BRANCH TO INSERT IMMEDIATELY
12556                                                                  ; FOLLOWING IN LINE DESCRIPTORS.
12557  046464  160102                          SUB R1,R2
12558  046466  062702  000400                  ADD #400,R2
12559  046472  010237  001762                  MOV R2,SBR              ;SAVE BRANCH INST
12560  046476  005002                          CLR R2
12561  046500  013703  001640                  MOV TBADR,R3
12562  046504  005701                  2$:     TST R1
12563  046506  001410                          BEQ 1$                  ;BRANCH IF ALL IN-LINE PTRS HAVE BEEN INSERTED.
12564  046510  010362  050166                  MOV R3,TINST+2(R2)      ;INSERT DESCRIPTOR POINTERS IN-LINE
12565  046514  005301                          DEC R1                  ;UPDATE FOR NEXT IN-LINE PTR
12566  046516  062702  000002                  ADD #2,R2
12567  046522  062703  000004                  ADD #4,R3
12568  046526  000766                          BR 2$                   ;RETURN TO WORK ON NEXT IN-LINE PTR.
12569  046530  012737  000001  002236  1$:     MOV #1,NXFLD            ;INITIALIZE FIELD PTR TO SECOND FIELD
12570  046536  004737  054400          11$:    JSR PC,RFN              ;GET NEXT FIELD CONTENTS.
12571  046542  020127  003634                  CMP R1,#TRN             ;ALL OPERANDS INSERTED IN-LINE?
12572  046546  001407                          BEQ 3$                  ;BRANCH IF YES
12573  046550  005337  001762                  DEC SBR
12574  046554  011162  050166                  MOV (R1),TINST+2(R2)    ;MOVE REGISTER OPERAND INTO IN-LINE LOC
12575  046560  062702  000002                  ADD #2,R2               ;UPDATE TO NEXT IN-LINE LOC
12576  046564  000764                          BR 11$                  ;RETURN TO WORK ON NEXT IN-LINE OPERAND
12577  046566  013762  001762  050166  3$:     MOV SBR,TINST+2(R2)     ;INSERT BRANCH
```

```
12578  046574  012737  050166  002220          MOV #TINST+2,ICOMPC     ;SAVE BRANCH LOCATION FOR PC
12579  046602  060237  002220                  ADD R2,ICOMPC           ;       CHECK ON IN-LINE INSTRUCTION COMPLETION
12580  046606  062702  000002          12$:    ADD #2,R2               ;INSERT HALTS FOLLOWING BRANCH
12581  046612  022702  000014                  CMP #14,R2
12582  046616  001404                          BEQ 4$
12583  046620  013762  001672  050166          MOV KHALT,TINST+2(R2)
12584  046626  000767                          BR 12$
12585
12586  046630  062737  000002  001746  4$:     ADD #2,FLOPTR           ;LOOK AT NEXT FLOW COMMAND (=00)
12587  046636  013702  001640                  MOV TBADR,R2            ;INITIALIZE POINTERS TO TEST & EMULATION BUFFERS
12588  046642  013703  001646                  MOV EBADR,R3
12589  046646  005037  002236                  CLR NXFLD               ;INITIALIZE FIELD PTR TO 1ST FIELD
12590  046652  004737  054400          41$:    JSR PC,RFN              ;GET NEXT FIELD CONTENTS
12591  046656  020127  003634                  CMP R1,#TRN             ;ALL BUFFER DESCRIPTORS FILLED?
12592  046662  001441                          BEQ 5$                  ;BRANCH IF YES
12593  046664  020127  003642                  CMP R1,#TR3             ;FOR CVTLN & CVTLP THE MEMORY ORDER
12594  046670  001021                          BNE 42$                 ;  OF THE LONG INTEGER LOW & HIGH
12595  046672  023727  050164  076157          CMP TINST,#76157        ;  IS REVERSED FROM THE REGISTER ORDER
12596  046700  001404                          BEQ 43$
12597  046702  023727  050164  076177          CMP TINST,#76177
12598  046710  001011                          BNE 42$
12599  046712  011112          43$:    MOV (R1),(R2)
12600  046714  011113                  MOV (R1),(R3)
12601  046716  162701  000002                  SUB #2,R1
12602  046722  011162  000002                  MOV (R1),2(R2)
12603  046726  011163  000002                  MOV (R1),2(R3)
12604  046732  000410                          BR 44$
12605  046734  011162  000002          42$:    MOV (R1),2(R2)          ;COPY BUFFER DESCRIPTORS FROM REGISTER
12606  046740  011163  000002                  MOV (R1),2(R3)          ; DESCRIPTORS.
12607  046744  162701  000002                  SUB #2,R1
12608  046750  011112                          MOV (R1),(R2)
12609  046752  011113                          MOV (R1),(R3)
12610  046754  062702  000004          44$:    ADD #4,R2               ;UPDATE BUFFER DESCRIPTOR POINTERS
12611  046760  062703  000004                  ADD #4,R3
12612  046764  000732                          BR 41$                  ;RETURN TO FILL NEXT DESCRIPTOR WORDS.
12613  046766  062737  000002  001746  5$:     ADD #2,FLOPTR           ;LOOK AT NEXT FLOW COMMAND (=00)
12614  046774  005737  002276                  TST RPTFLG              ;IS TEST BEING REPEATED??
12615  047000  001025                          BNE 6$                  ;BRANCH IF YES  (DONT UPDATE EMUL BUFFER
12616                                                                  ;  DESCRIPTORS - THEY ARE ALREADY UP-TO-DATE).
12617  047002  013703  001646                  MOV EBADR,R3            ;INITIALIZE POINTER TO EMULATION BUFFER.
12618  047006  005037  002236                  CLR NXFLD               ;INITIALIZE FIELD PTR TO 1ST FIELD
12619  047012  004737  054300          51$:    JSR PC,RFNX             ;GET NEXT FIELD CONTENTS
12620  047016  005701                          TST R1                  ;ALL RESULT EMULATOR BUFFER DESCRIPTORS UPDATED?
12621  047020  001415                          BEQ 6$                  ;BRANCH IF YES
12622  047022  020127  000016                  CMP R1,#16              ;DESCRIPTOR TO BE UPDATED?
12623  047026  001407                          BEQ 52$                 ;BRANCH IF NO
12624  047030  062701  003712                  ADD #ERNR,R1            ;FORM POINTER INTO EMUL. RESULT STACK
12625  047034  011113                          MOV (R1),(R3)           ;COPY EMUL. RESULT INTO BUFFER
12626  047036  162701  000002                  SUB #2,R1
12627  047042  011163  000002                  MOV (R1),2(R3)
12628  047046  062703  000004          52$:    ADD #4,R3               ;UPDATE EMUL. BUFFER POINTER
12629  047052  000757                          BR 51$                  ;RETURN TO WORK ON NEXT EMUL. RESULT.
12630
12631
```

```
12632  047054  013737  001720  003634  6$:     MOV PAT0,TR0          ;INITIALIZE TRX'S TO #PATTERN
12633  047062  013737  001722  003636          MOV PAT1,TR1
12634  047070  013737  001724  003640          MOV PAT2,TR2
12635  047076  013737  001726  003642          MOV PAT3,TR3
12636  047104  013737  001730  003644          MOV PAT4,TR4
12637  047112  013737  001732  003646          MOV PAT5,TR5
12638
12639  047120  062737  000002  001746  7$:     ADD #2,FLOPTR         ;OVERWRITE WITH #PATTERN ALL ERNRS EXCEPT
12640                                          ; THOSE THAT CONTAIN A REGISTER RESULT.
12641                                          ;LOOK AT NEXT FLOW COMMAND (=00)
12642  047126  013737  003712  002256          MOV ER0R,TER0R         ;COPY ERNRS INTO TEMP SPACE AT TERNR
12643  047134  013737  003714  002260          MOV ER1R,TER1R
12644  047142  013737  003716  002262          MOV ER2R,TER2R
12645  047150  013737  003720  002264          MOV ER3R,TER3R
12646  047156  013737  003722  002266          MOV ER4R,TER4R
12647  047164  013737  003724  002270          MOV ER5R,TER5R
12648
12649  047172  013737  001720  003712  8$:     MOV PAT0,ER0R         ;OVERWRITE ERNR STACK WITH # PATTERN
12650  047200  013737  001722  003714          MOV PAT1,ER1R
12651  047206  013737  001724  003716          MOV PAT2,ER2R
12652  047214  013737  001726  003720          MOV PAT3,ER3R
12653  047222  013737  001730  003722          MOV PAT4,ER4R
12654  047230  013737  001732  003724          MOV PAT5,ER5R
12655
12656  047236  005037  002236          9$:     CLR NXFLD             ;INITIALIZE FIELD PTR TO 1ST FIELD
12657  047242  004737  054300          91$:    JSR PC,RFNX           ;GET NEXT FIELD CONTENTS
12658  047246  020127  000016                  CMP R1,#16            ;END OF REGISTER RESULT LIST?
12659  047252  001407                          BEQ 10$               ;BRANCH IF YES
12660  047254  010102                          MOV R1,R2
12661  047256  062701  003712                  ADD #ERNR,R1
12662  047262  062702  002256                  ADD #TER0R,R2
12663  047266  011211                          MOV (R2),(R1)         ;COPY REGISTER RESULT BACK INTO ERNR STACK
12664                                          ; FOR TEMPORARY STORAGE.
12665  047270  000764                          BR 91$                ;RETURN TO WORK ON NEXT REGISTER RESULT.
12666  047272  000137  047342          10$:    JMP LTSTOP
12667
12668  047276  013737  001674  050166  REGOP:  MOV KBR5,TINST+2
12669  047304  013737  001672  050170          MOV KHALT,TINST+4
12670  047312  013737  001672  050172          MOV KHALT,TINST+6
12671  047320  013737  001672  050174          MOV KHALT,TINST+10
12672  047326  013737  001672  050176          MOV KHALT,TINST+12
12673  047334  013737  001672  050200          MOV KHALT,TINST+14
12674
12675  047342  010637  002234          LTSTOP: MOV SP,TSP            ;SAVE STACK POINTER
12676  047346  022737  076026  050164          CMP #076026,TINST     ;IS INST A L2D6?
12677  047354  001003                          BNE 2$                ;BRANCH IF NO
12678  047356  013706  003650          3$:     MOV TR6,SP            ;LOAD DESC 6 INST - USE TR6 CONTENTS AS SP
12679  047362  000411                          BR 1$
12680  047364  022737  076066  050164  2$:     CMP #076066,TINST     ;IS INST A L3D6?
12681  047372  001771                          BEQ 3$                ;BRANCH IF YES
12682  047374  012737  120602  003726          MOV #CSTACK,ER6R
12683  047402  012706  120602                  MOV #CSTACK,SP
12684  047406  010637  003650          1$:     MOV SP,TR6            ;LOAD TR6 FOR INPUT REG DISPLAY
12685  047412  013737  003730  003652          MOV ECCR,TCC          ;SETUP CONDITION CODES
```

```
12686  047420  013701  050164                 MOV TINST,R1          ;IS INST A L2D OR L3D?
12687  047424  042701  000007                 BIC #7,R1
12688  047430  022701  076020                 CMP #076020,R1        ;IF YES SETUP CONDITION CODES=EXPECTED CODES.
12689  047434  001405                         BEQ 4$
12690  047436  022701  076060                 CMP #076060,R1
12691  047442  001402                         BEQ 4$
12692  047444  005137  003652                 COM TCC               ;OTHERWISE SETUP CC=COMPLEMENT OF EXPECTED CC.
12693  047450  004737  055252         4$:     JSR PC,SELREG         ;SELECT REGISTER SET AND SETUP CONTENTS OF
12694                                                               ;  REGISTER SET NOT SELECTED.
12695  047454  012737  000240  050202         MOV #NOP,TINRET       ;RESTORE NOP TO CIS INST RETURN POINT
12696  047462  004737  056446                 JSR PC,SELMD          ;SELECT MODE & I/D ENABLES; LOAD MMR3 TO
12697                                                               ;  REFLECT D-SPACE ENABLE/DIS SELECTION
12698  047466  005737  002164                 TST MODE              ;TEST MODE = KERNEL?
12699  047472  001403                         BEQ 17$               ;BRANCH IF YES
12700  047474  012737  000000  050202         MOV #HALT,TINRET      ;LOAD HALT AT INST UNDER TEST RETURN ADDRESS
12701                                                               ;  (ALLOWS TRAPPING BACK TO KERNEL MODE
12702                                                               ;  AFTER CIS INST EXECUTION).
12703  047502  005737  002162         17$:    TST MMFLG             ;IS MEMORY MGMT AVAILABLE?
12704  047506  001411                         BEQ 8$                ;BRANCH IF NO
12705  047510  004737  056672                 JSR PC,SETPDR         ;SETUP MEM MGMT PDR'S
12706                                                               ;NOTE: PAR'S ARE SETUP AT BEGINNING OF PROG
12707                                                               ; KERNEL,USER & SUPV SPACES ARE ALWAYS MAPPED
12708                                                               ; TO SAME PHYSICAL MEMORY)
12709  047514  012737  000240  050146         MOV #NOP,TOMM         ;ALLOW MEMORY MANAGEMENT TURN ON
12710  047522  012737  000240  050212         MOV #NOP,TOFMM        ;ALLOW MEMORY MANAGEMENT TURN OFF
12711  047530  000406                         BR 9$
12712  047532  012737  000403  050146  8$:    MOV #403,TOMM         ;INHIBIT MEM MGMT TURN ON
12713  047540  012737  000402  050212         MOV #402,TOFMM
12714  047546  013700  003634         9$:     MOV TR0,R0            ;LOAD TEST OPERANDS INTO REGISTERS
12715  047552  010037  002572                 MOV R0,STATR0         ;SAVE STATE OF CISP
12716  047556  013701  003636                 MOV TR1,R1
12717  047562  010137  002574                 MOV R1,STATR1
12718  047566  013702  003640                 MOV TR2,R2
12719  047572  010237  002576                 MOV R2,STATR2
12720  047576  013703  003642                 MOV TR3,R3
12721  047602  010337  002600                 MOV R3,STATR3
12722  047606  013704  003644                 MOV TR4,R4
12723  047612  010437  002602                 MOV R4,STATR4
12724  047616  013705  003646                 MOV TR5,R5
12725  047622  010537  002604                 MOV R5,STATR5
12726  047626  010637  002606                 MOV SP,STATR6
12727  047632  005737  002164                 TST MODE              ;IS MODE = KERNEL?
12728  047636  001003                         BNE 5$                ;BRANCH IF NO
12729  047640  162737  000006  002606         SUB #6,STATR6         ;ADJUST SAVED STACK POINTER TO ACCOUNT FOR
12730                                                               ;  INTERRUPT STACK PUSH (KERNEL = CIS INST STACK)
12731  047646  042737  177760  003652  5$:     BIC #177760,TCC       ;FORM PSW TO BE USED UPON ENTRY TO CIS INST.
12732  047654  017737  132004  001756         MOV @TPSW,TSTPSW
12733  047662  042737  170017  001756         BIC #170017,TSTPSW
12734  047670  053737  003652  001756         BIS TCC,TSTPSW
12735  047676  022737  000001  002164         CMP #1,MODE           ;TEST MODE = SUPERVISOR?
12736  047704  001004                         BNE 6$                ;BRANCH IF NO
12737  047706  052737  040000  001756         BIS #040000,TSTPSW    ;SET CURRENT MODE = SUPV IN TSTPSW
12738  047714  000407                         BR 7$
12739  047716  022737  000003  002164  6$:     CMP #3,MODE           ;TEST MODE = USER?
```

```
12740  047724  001015                          BNE 10$                 ;BRANCH IF NO
12741  047726  052737  140000  001756          BIS #140000,TSTPSW      ;SET CURR MODE = USER IN TSTPSW
12742  047734  013777  001756  131722  7$:     MOV TSTPSW,@TPSW        ;MODE = USER + SUPV; SWITCH TO TEST MODE
12743  047742  013706  002606                  MOV STATR6,SP           ;SETUP TEST MODE R6
12744  047746  042777  140000  131710          BIC #140000,@TPSW       ;SWITCH BACK TO KERNEL
12745  047754  013706  002234                  MOV TSP,SP              ;SETUP KERNEL MODE R6
12746  047760  013737  001756  002570  10$:     MOV TSTPSW,STATPS
12747  047766  005037  002552                  CLR INTCT               ;CLEAR INTERRUPT COUNT
12748  047772  042737  040000  002136          BIC #40000,FATAL        ;CLEAR INTERRUPT INDICATOR IN FATAL ERROR WORD
12749  050000  005037  002544                  CLR PROGCT              ;CLEAR PROGRESS COUNT
12750  050004  022777  000001  131724          CMP #1,@SWR             ;CHECK FOR REQUEST TO STOP ON A TEST
12751  050012  001027                          BNE TOLTC               ;DON'T STOP
12752  050014  005737  002222                  TST STOPTF              ;HAS TEST BEEN ENTERED?
12753  050020  001015                          BNE 11$                 ;BRANCH IF YES
12754  050022  012737  177777  002222          MOV #177777,STOPTF      ;SET FLAG TO INDICATE THAT TEST HAS BEEN ENTERED
12755  050030  010046                          MOV R0,-(SP)            ;SAVE  R0 - PRINT CALL DESTROYS IT
12756  050032                                  PRINTB #ASKST           ;ASK USER FOR TEST # TO STOP ON
  (6)  050032  012746  013040                  MOV     #ASKST,-(SP)
  (3)  050036  010600                          MOV     SP,R0
  (4)  050040  004737  066232                  JSR PC,FPRINT
12757  050044  012600                          MOV (SP)+,R0            ;RESTORE R0
12758  050046  104404                          RDDEC                   ;READ DECIMAL #
12759  050050  012637  002224                  MOV (SP)+,STOPT         ;SAVE STOP TEST #
12760  050054  023737  002224  001420  11$:     CMP STOPT,TOTTC         ;IS CURRENT TEST = STOP TEST
12761  050062  001003                          BNE TOLTC               ;BRANCH IF NO
12762  050064  012737  177777  002046          MOV #177777,NOERDS      ;SET FLAGS TO CAUSE CURRENT TEST TO BE
12763                                                                  ;DISPLAYED AND USER TO BE QUERIED FOR FURTHER ACTION.
12764  050072  000414                  TOLTC:  BR TOPC2                ;OVERWRITTEN WITH A NOP IF LTC IS USED FOR
12765                                                                  ;  INTERRRUPT TESTING
12766  050074  013737  003034  003036          MOV LCNT,VLCNT          ;RESET LTC COUNTER
12767  050102  004737  063074                  JSR PC,LTCSUP           ;SYNC UP TO LTC
12768  050106  052777  000100  132716          BIS #100,@CLKS          ;ENABLE LTC INTR
12769  050114  005337  003036          1$:     DEC VLCNT               ;KILL MOST OF TIME BEFORE EXPECTED
12770                                                                  ;  INTERRUPT
12771  050120  001375                          BNE 1$
12772  050122  000410                          BR PREINS
12773  050124                          TOPC2:
12775  050124  000403                          BR TOPC1                ;OVERWRITTEN WITH A NOP IF LATENCY IS BEING TESTED
12776  050126  052777  000001  132400          BIS #001,@PC2CSR                ;TURN ON P-CLK2
12777  050134  000403                  TOPC1:  BR PREINS                       ;OVERWRITTEN WITH A NOP IF INTERRUPTABILITY IS B
12778  050136  052777  000101  132360          BIS #101,@PC1CSR                ;TURN ON P-CLK1
12780  050144  000240                  PREINS: NOP                     ;REPLACED WITH A HALT IF OPERATOR REQUESTED
12781                                                                  ;  'HALT AT CIS INST'.
12782  050146  000403                  TOMM:   BR GO                   ;OVERWRITTEN WITH A NOP IF MEM MGMT TEST STATE = ON
12783  050150  052737  000001  177572          BIS #1,@#MMR0           ;TURN ON MEMORY MGMT
12784  050156  013777  001756  131500  GO:     MOV TSTPSW,@TPSW        ;SET PSW TO DESIRED STATE (PRIOR TO THIS MODE=KERNEL)
12785  050164  000000                  TINST:  .WORD 0                 ;EXECUTE CIS INST UNDER TEST.
12786  050166  000405                          BR TINRET
12787  050170  000000                          HALT                    ;IF PROGRAM STOPS AT ANY ONE OF THESE HALTS,
12788  050172  000000                          HALT                    ;  THEN THE CIS INSTRUCTION EXECUTION
12789  050174  000000                          HALT                    ;  RETURNED WITH INCORRECT PC.
12790  050176  000000                          HALT
12791  050200  000000                          HALT
12792  050202  000240                  TINRET: NOP                     ;OVERWRITTEN WITH A HALT IF MODE = USER OR SUPV
```

```
12793
12794  050204  017737  131454  120604          MOV @TPSW,SAVKCC        ;NOTE: HALT IS USED TO TRAP BACK TO KERNEL MODE
12795  050212  000402                  TOFMM:  BR CSCC                 ;SAVE CC RESULTS
12796  050214  005037  177572                  CLR @#MMR0              ;OVERWRITTEN WITH A NOP IF MEM MGMT IS AVAILABLE
12797  050220  013737  120604  003672  CSCC:   MOV SAVKCC,TCCR         ;TURN OFF MEMORY MGMT
12798  050226  042737  177760  003672  SUHRET: BIC #177760,TCCR
12799  050234  010037  003654                  MOV R0,TR0R             ;SAVE REGISTER RESULTS
12800  050240  010137  003656                  MOV R1,TR1R
12801  050244  010237  003660                  MOV R2,TR2R
12802  050250  010337  003662                  MOV R3,TR3R
12803  050254  010437  003664                  MOV R4,TR4R
12804  050260  010537  003666                  MOV R5,TR5R
12805  050264  032737  030000  177776          BIT #30000,@#PSW        ;WAS PREVIOUS MODE USER OR SUPV?
12806  050272  001404                          BEQ 4$                  ;BRANCH IF NO
12807  050274  006506                          MFPI SP                 ;GET PREVIOUS MODE SP
12808  050276  012637  003670                  MOV (SP)+,TR6R          ;STORE PREVIOUS SP
12809  050302  000402                          BR 5$
12810  050304  010637  003670          4$:     MOV SP,TR6R
12811  050310  013706  002234          5$:     MOV TSP,SP
12812  050314  004737  055476                  JSR PC,CKUREG           ;VERIFY THAT REG SET WHICH WAS NOT
12813                                                                  ;  SELECTED DID NOT GET CHANGED AND SWITCH TO
12814                                                                  ;  REGISTER SET 0.
12815  050320  022737  111111  120400          CMP #111111,PRECSK      ;DID CIS INST EXECUTION USE MORE THAN 64 STACK WORDS
12816  050326  001012                          BNE 2$                  ;BRANCH IF YES
12817  050330  022737  111111  120602          CMP #111111,PSTCSK      ;DID CIS INST DESTROY LOC AT STACK + 2
12818  050336  001416                          BEQ 3$                  ;BRANCH IF NO
12819  050340                                  PRINTB #STKM2
  (6)  050340  012746  011714                  MOV     #STKM2,-(SP)
  (3)  050344  010600                          MOV     SP,R0
  (4)  050346  004737  066232                  JSR PC,FPRINT
12820  050352  000405                          BR 1$
12821  050354                          2$:     PRINTB #STKM1
  (6)  050354  012746  011623                  MOV     #STKM1,-(SP)
  (3)  050360  010600                          MOV     SP,R0
  (4)  050362  004737  066232                  JSR PC,FPRINT
12822  050366  012737  177777  002156  1$:     MOV #177777,ERRSTK      ;SET STACK ERROR FLAG
12823  050374  000137  042414          3$:     JMP FCRTN
12824
12825
12826  050400                          FC13:                           ;FLOW COMMAND = 13 - COMPARE TEST RESULTS
12827                                                                  ;  TO EMULATION RESULTS - INDICATE
12828                                                                  ;  ANY ERRORS.
12829  050400  005737  001742                  TST CERFLG              ;UUT HAVE A CPU ERROR REG?              ;;REV-C
12830  050404  001425                          BEQ 1$                  ;BRANCH IF NO                           ;;REV-C
12831  050406  013737  177766  001744          MOV @#177766,CERSAV     ;SAVE CONTENTS OF ERROR REGISTER        ;;REV-C
12832  050414  032737  000001  001744          BIT #BIT00,CERSAV       ;IS POWER MONITOR BIT SET??             ;;REV-C
12833  050422  001416                          BEQ 1$                  ;BRANCH IF NO                           ;;REV-C
12834  050424                                  PRINTB #POWMON          ;MSG: POWER MONITOR BIT SET             ;;REV-C
  (6)  050424  012746  013624                  MOV     #POWMON,-(SP)
  (3)  050430  010600                          MOV     SP,R0
  (4)  050432  004737  066232                  JSR PC,FPRINT
12835  050436  012737  000177  001116          MOV #177,$FATAL         ;SET APT FATAL ERROR WORD               ;;REV-C
12836  050444  012737  000001  001114          MOV #1,$MSGTY           ;INDICATE FATAL ERROR TO APT            ;;REV-C
12837  050452  000000                          HALT                    ;"CONTINUE" TO PROCEED WITH TESTING     ;;REV-C
```

```
12838  050454  005037  177766              CLR @#177766          ;CLEAR ERROR REG BEFORE PROCEEDING
12839  050460  005037  002150       1$:    CLR ERRCC                                    ;;REV-C
12840  050464  005037  002152              CLR ERRREG
12841  050470  005037  002154              CLR ERRBUF
12842  050474  004737  054134              JSR PC,RF1            ;FORM POINTER TO FIRST TEST OPERAND
12843                                                            ;  TO BE ADJUSTED.
12844  050500  022701  003652              CMP #TRN+16,R1        ;IF OPERAND = 7 THEN ALL REQUIRED ADJUSTMENTS
12845                                                            ;  HAVE BEEN COMPLETED
12846  050504  001446                      BEQ CCCK              ;DONE?
12847  050506  032737  000100  050164      BIT #100,TINST        ;INST TYPE (REG OR INLINE)?
12848  050514  001030                      BNE ADJI
12849  050516  004737  051516              JSR PC,ADJR           ;NO - ADJUST SPECIFIED OPERANDS
12850  050522  004737  054166              JSR PC,RF2            ;FORM POINTER TO 2ND TEST OPERAND
12851                                                            ;  TO BE ADJUSTED.
12852  050526  022701  003652              CMP #TRN+16,R1
12853  050532  001433                      BEQ CCCK              ;DONE?
12854  050534  004737  051516              JSR PC,ADJR           ;NO - ADJUST AGAIN
12855  050540  004737  054222              JSR PC,RF3            ;FORM POINTER TO 3RD TEST OPERAND TO BE ADJUSTED
12856  050544  022701  003652              CMP #TRN+16,R1
12857  050550  001424                      BEQ CCCK                    ;DONE?
12858  050552  004737  051516              JSR PC,ADJR           ;NO - ADJUST
12859  050556  004737  054252              JSR PC,RF4            ;FORM POINTER TO 4TH TEST OPERAND TO BE ADJUSTED
12860  050562  022701  003652              CMP #TRN+16,R1
12861  050566  001415                      BEQ CCCK                    ;DONE?
12862  050570  004737  051516              JSR PC,ADJR           ;NO - ADJUST
12863  050574  000412                      BR CCCK
12864  050576  062737  000002  001746 ADJI: ADD #2,FLOPTR         ;LOOK AT NEXT FLOW COMMAND (=00)
12865  050604  004737  054134              JSR PC,RF1            ;FORM PTR TO INLINE TYPE INST REG OPERAND
12866                                                            ;  TO BE ADJUSTED.
12867  050610  022701  003652              CMP #TRN+16,R1        ;IF OPERAND = 7 THEN NO REG OPERANDS TO ADJUST.
12868  050614  001402                      BEQ CCCK              ;DONE?
12869  050616  004737  051516              JSR PC,ADJR           ;NO ADJUST SPECIFIED OPERAND.
12870                                                            ;NOTE: INLINE TYPE INST NEVER REQUIRE
12871                                                            ;  THAT MORE THAN 1 OPERAND BE ADJUSTED.
12872  050622  042737  177760  003730 CCCK: BIC #177760,ECCR      ;CLEAR OUT ALL BUT CONDITION CODES
12873  050630  005737  036316              TST EZDF              ;CONDITION UNDER TEST = DIVP BY 0?
12874  050634  001406                      BEQ 1$                ;BRANCH IF NO
12875  050636  042737  000014  003672      BIC #14,TCCR          ;MASK OUT ALL BUT C & V COND. CODES
12876  050644  042737  000014  003730      BIC #14,ECCR
12877  050652  004737  070640       1$:    JSR PC,RECCC          ;RECORD CONDITION CODE USAGE
12878  050656  023737  003730  003672      CMP ECCR,TCCR         ;CHECK CONDITION CODE RESULTS
12879  050664  001403                      BEQ REGCK
12880  050666  012737  177777  002150      MOV #177777,ERRCC     ;SET CONDITION CODE ERROR FLAG
12881  050674  005737  036316       REGCK: TST EZDF              ;CONDITION UNDER TEST = DIVP BY 0?
12882  050700  001104                      BNE EZDBCK            ;BRANCH IF YES
12883  050702  023737  003712  003654      CMP EROR,TROR         ;CHECK REGISTER RESULTS
12884  050710  001030                      BNE REGERR
12885  050712  023737  003714  003656      CMP ER1R,TR1R
12886  050720  001024                      BNE REGERR
12887  050722  023737  003716  003660      CMP ER2R,TR2R
12888  050730  001020                      BNE REGERR
12889  050732  023737  003720  003662      CMP ER3R,TR3R
12890  050740  001014                      BNE REGERR
12891  050742  023737  003722  003664      CMP ER4R,TR4R
```

```
12892  050750  001010                          BNE REGERR
12893  050752  023737  003724  003666          CMP ER5R,TR5R
12894  050760  001004                          BNE REGERR
12895  050762  023737  003726  003670          CMP ER6R,TR6R
12896  050770  001403                          BEQ BUFCK
12897  050772  012737  177777  002152  REGERR: MOV #177777,ERRREG      ;REGISTER ERROR - SET REGISTER ERROR FLAG
12898  051000  032737  000004  002144  BUFCK:  BIT #4,SPHAND           ;SPECIAL HANDLING?
12899  051006  001077                          BNE TFORE               ;IF YES SKIP BUFFER CHECK
12900  051010  013701  001640                  MOV TBADR,R1            ;CHECK BUFFER RESULTS
12901  051014  013702  001646                  MOV EBADR,R2
12902  051020  005737  002164                  TST MODE                ;IS MODE = KERNEL?
12903  051024  001024                          BNE 1$                  ;BRANCH IF NO
12905  051026  023727  050134  000240          CMP TOPC1,#NOP          ;INTERRUPTABILITY BEING TESTED?
12906  051034  001404                          BEQ 3$                  ;BRANCH IF YES
12908  051036  023727  050072  000240          CMP TOLTC,#NOP
12909  051044  001014                          BNE 1$                  ;BRANCH IF NO
12910  051046  023727  050164  076026  3$:     CMP TINST,#76026        ;IS INST UNDER TEST A L2D6 OR L3D6
12911  051054  001404                          BEQ 2$
12912  051056  023727  050164  076066          CMP TINST,#76066
12913  051064  001004                          BNE 1$
12914  051066  062701  000006          2$:     ADD #6,R1               ;YES - SPECIAL CASE
12915  051072  062702  000006                  ADD #6,R2               ;L2D6 OR L3D6 WITH INTERRUPTABILITY TEST.MODE=KERNEL.
12916                                                                  ;DUE TO THE INTERRUPT OCCURRING IMMEDIATELY
12917                                                                  ;AFTER THE L2D6 OR L3D6 INST WHEN R6 POINTS
12918                                                                  ;TO TBADR (TEST BUFFER), THE FIRST 2 TO 3 WORDS OF
12919                                                                  ;TBADR WILL GET DESTROYED.  DONT COMPARE
12920                                                                  ;FIRST 3 WORDS OF BUFFERS.
12921  051076  023701  001760          1$:     CMP TBEND,R1            ;REACH END OF BUFFER YET?
12922  051102  101441                          BLOS TFORE              ;YES
12923  051104  122122                          CMPB (R1)+,(R2)+        ;NO - COMPARE NEXT WORD
12924  051106  001773                          BEQ 1$
12925  051110  000421                          BR BUFERR
12926
12927  051112  013701  001640          EZDBCK: MOV TBADR,R1            ;CHECK BUFFER RESULTS - ZERO DIVP CASE
12928  051116  013702  001646                  MOV EBADR,R2            ;DON'T COMPARE ON DST STRING
12929  051122  023701  001760          2$:     CMP TBEND,R1            ;REACH END OF BUFFER YET?
12930  051126  101427                          BLOS TFORE              ;YES
12931  051130  020237  036320                  CMP R2,EZDBEG           ;AT BEGINNING OF DST STRING?
12932  051134  001005                          BNE 1$                  ;BRANCH IF NO
12933  051136  063702  036322                  ADD EZDEND,R2           ;ADJUST POINTERS TO END OF DST STRING
12934  051142  063701  036322                  ADD EZDEND,R1
12935  051146  000765                          BR 2$
12936  051150  122122                  1$:     CMPB (R1)+,(R2)+        ;COMPARE NEXT BYTE
12937  051152  001763                          BEQ 2$
12938  051154  012737  177777  002154  BUFERR: MOV #177777,ERRBUF      ;BUFFER ERROR - SET BUFFER ERROR FLAG
12939  051162  005301                          DEC R1
12940  051164  005302                          DEC R2
12941  051166  010137  002200                  MOV R1,AEADR
12942  051172  010237  002204                  MOV R2,EMADR
12943  051176  111137  002202                  MOVB (R1),AEDTA
12944  051202  111237  002206                  MOVB (R2),EMDTA
12945  051206  005037  002062          TFORE:  CLR ERRS                ;CLEAR ERROR INDICATOR
12946  051212  005737  002150                  TST ERRCC               ;IF COMPARISON HAS TURNED UP ERRORS
12947                                                                  ;  ENTER ERROR DISPLAY ROUTINE.
```

```
12948  051216  001020                          BNE CISERR
12949  051220  005737  002152                  TST ERRREG
12950  051224  001015                          BNE CISERR
12951  051226  005737  002154                  TST ERRBUF
12952  051232  001012                          BNE CISERR
12953  051234  005737  002156                  TST ERRSTK
12954  051240  001007                          BNE CISERR
12955  051242  005037  002276                  CLR RPTFLG              ;CLEAR THE REPEAT TEST FLAG
12956  051246  005737  002046                  TST NOERDS              ;DISPLAY EVEN THOUGH THERE WAS NO ERROR?
12957  051252  001017                          BNE NOER                ;BRANCH IF YES
12958  051254  000137  051560                  JMP SWOPC
12959
12960  051260                          CISERR:
12961  051260  005237  002060                  INC ERRCT               ;INCREMENT ERROR COUNT
12962  051264  005037  002210                  CLR QRYFLG              ;ASSURE PRINTOUT ON ERROR
12963  051270  012737  000001  001114          MOV #1,$MSGTY           ;SET APT MESSAGE TYPE TO 1
12964  051276  013737  002136  001116          MOV FATAL,$FATAL        ;SET APT FATAL ERROR WORD
12965  051304  012737  177777  002062          MOV #177777,ERRS        ;SET ERROR INDICATOR
12966  051312                          NOER:
12968  051312  005737  001764                  TST RANDOM              ;IN RANDOM MODE ?
12969  051316  001413                          BEQ 40$                 ;BRANCH IF NO
12970  051320                                  PRINTB #FORM36,STRNC,STRP1,STRP2        ;PRINT 3 SEED CONSTANTS
  (9)  051320  013746  002006                  MOV     STRP2,-(SP)
  (8)  051324  013746  002004                  MOV     STRP1,-(SP)
  (7)  051330  013746  002002                  MOV     STRNC,-(SP)
  (6)  051334  012746  014400                  MOV     #FORM36,-(SP)
  (3)  051340  010600                          MOV     SP,R0
  (4)  051342  004737  066232                  JSR PC,FPRINT
12972  051346  013737  002240  003634  40$:    MOV TTR0,TR0            ;RESTORE TRN'S - NECESSARY IN CASE OPERATOR
12973  051354  013737  002242  003636          MOV TTR1,TR1            ;  REQUESTS THE REPEAT OF AN IN-LINE TEST CONDITION.
12974  051362  013737  002244  003640          MOV TTR2,TR2
12975  051370  013737  002246  003642          MOV TTR3,TR3
12976  051376  013737  002250  003644          MOV TTR4,TR4
12977  051404  013737  002252  003646          MOV TTR5,TR5
12978  051412  005737  002062                  TST ERRS                ;ERROR INDICATOR SET?
12979  051416  001410                          BEQ 1$                  ;BRANCH IF NO
12980  051420                                  PRINTB  #FORM37,ERRCT    ;PRINT 'ERROR # XXXXXX'
  (7)  051420  013746  002060                  MOV     ERRCT,-(SP)
  (6)  051424  012746  014462                  MOV     #FORM37,-(SP)
  (3)  051430  010600                          MOV     SP,R0
  (4)  051432  004737  066232                  JSR PC,FPRINT
12981  051436  000405                          BR 2$
12982  051440                          1$:     PRINTB #SDASH           ;PRINT DASHES
  (6)  051440  012746  016663                  MOV     #SDASH,-(SP)
  (3)  051444  010600                          MOV     SP,R0
  (4)  051446  004737  066232                  JSR PC,FPRINT
12983  051452                          2$:     PRINTB  #DASH
  (6)  051452  012746  016563                  MOV     #DASH,-(SP)
  (3)  051456  010600                          MOV     SP,R0
  (4)  051460  004737  066232                  JSR PC,FPRINT
12984  051464  004737  064430                  JSR PC,INSERR
12985  051470  000137  042024                  JMP RTC                 ;REPEAT TEST RETURN
12986  051474  000137  051560                  JMP SWOPC               ;NORMAL RETURN
12987  051500  005737  002100                  TST FSRUN               ;RESTART RETURN
```

```
12988
12989  051504  001402                          BEQ 3$                  ;FIELD SERVICE OR DESIGN VERIF TYPE RUN?
12991  051506  000137  037066                  JMP START               ;BRANCH IF DESIGN VERIF TYPE RUN
12996  051512  000137  037276          3$:     JMP DVTST               ;RESTART FIELD SERVICE TYPE RUN
12997                                                                  ;RESTART DESIGN VERIF TYPE RUN
12998
12999                                          .EVEN
13000  051516                          ADJR:                           ;SUBROUTINE TO SUBTRACT OUT BUFFER STARTING
13001                                                                  ;  ADDRESSES FROM SPECIFIED TEST AND EMULATION
13002                                                                  ;  RESULTS.
13003  051516  162701  003634                  SUB #TRN,R1
13004  051522  062701  003654                  ADD #TRNR,R1
13005  051526  163711  001640                  SUB TBADR,(R1)          ;SUBTRACT OUT TEST BUFFER STARTING ADDRESS
13006                                                                  ;  FROM TEST OPERAND
13007  051532  032737  000100  050164          BIT #100,TINST          ;NOTE: FOR INLINE CASE THE EMULATION STEP WAS
13008                                                                  ;       SKIPPED. THEREFORE DONT 'RE' ADJUST
13009                                                                  ;       EMULATION OPERANDS.
13010  051540  001006                          BNE 1$
13011  051542  162701  003654                  SUB #TRNR,R1            ;POINT R1 TO EMULATION OPERAND RATHER THAT
13012  051546  062701  003712                  ADD #ERNR,R1            ;  TEST OPERAND.
13013  051552  163711  001646                  SUB EBADR,(R1)          ;SUBTRACT OUT EMULATION BUFFER STARTING
13014                                                                  ;  ADDRESS FROM EMULATION OPERAND.
13015  051556  000207                  1$:     RTS PC
13016
13017
13018
13019  051560                          FC14:                           ;FLOW COMMAND = 14 - UPDATE POINTERS
13020                                                                  ;  FOR NEXT TEST CONDITION.
13021  051560                          SWOPC:
13022  051560  013701  050164                  MOV TINST,R1            ;IS INST = L2D OR L3D ??
13023  051564  042701  000007                  BIC #7,R1
13024  051570  022701  076020                  CMP #076020,R1
13025  051574  001437                          BEQ 1$                  ;BRANCH IF YES (NO INLINE CASE)
13026  051576  022701  076060                  CMP #076060,R1
13027  051602  001434                          BEQ 1$
13028  051604  032737  140000  002144          BIT #140000,SPHAND      ;SKIP INLINE AND ADDITIONAL DATA TYPE TESTING
13029  051612  001030                          BNE 1$                  ;BRANCH IF YES
13030  051614  005737  001764                  TST RANDOM              ;RANDOM EXERCISE MODE?
13031  051620  001027                          BNE 2$                  ;BRANCH IF YES
13032                                                                  ; NOTE: IN RANDOM  EXERCISE MODE DATA TYPES ARE
13033                                                                  ;       SELECTED RANDOMLY FOR EACH TEST CONDITION.
13034  051622  005737  002444                  TST DECINS              ;DECIMAL INST?
13035  051626  001424                          BEQ 2$                  ;BRANCH IF NO
13036  051630  032737  000100  050164          BIT #100,TINST          ;INLINE INST JUST TESTED
13037  051636  001020                          BNE 2$                  ;BRANCH IF YES
13038  051640  023727  002464  000001          CMP ZPM,#1              ;IS INST ZONED ,PACKED, OR MIXED?
13039  051646  001420                          BEQ PACKED              ;BRANCH IF PACKED
13040  051650  023727  002464  000002          CMP ZPM,#2
13041  051656  001536                          BEQ ZONED               ;BRANCH IF ZONED
13042  051660  023727  002464  000003          CMP ZPM,#3
13043  051666  001406                          BEQ 3$                  ;BRANCH IF MIXED ZONED PACKED
13044  051670  000137  052530                  JMP MIXDPZ              ;MIXED PACKED ZONED
13045  051674  000137  053122          1$:     JMP NXTTC
13046  051700  000137  053046          2$:     JMP CFINL
```

```
13047  051704  000137  052674          3$:     JMP MIXDZP
13048
13049  051710  032737  000001  002460  PACKED: BIT #1,PKPTW          ;SET STRING 1 DESC TYPE BASED ON BIT 0
13050  051716  001004                          BNE 1$                ;  CONTENTS OF PKPTW
13051  051720  012737  000006  002446          MOV #6,S1TYPE
13052  051726  000403                          BR 2$
13053  051730  012737  000007  002446  1$:     MOV #7,S1TYPE
13054
13055  051736  032737  000002  002460  2$:     BIT #2,PKPTW          ;SET STRING 2 DESC TYPE BASED ON
13056  051744  001004                          BNE 3$                ;  BIT 1 CONTENTS OF PKPTW
13057  051746  012737  000006  002450          MOV #6,S2TYPE
13058  051754  000403                          BR 4$
13059  051756  012737  000007  002450  3$:     MOV #7,S2TYPE
13060
13061  051764  032737  000004  002460  4$:     BIT #4,PKPTW          ;SET STRING 3 DESC TYPE BASED
13062  051772  001004                          BNE 5$                ;  BIT 2 CONTENTS OF PKPTW
13063  051774  012737  000006  002452          MOV #6,S3TYPE
13064  052002  000403                          BR 6$
13065  052004  012737  000007  002452  5$:     MOV #7,S3TYPE
13066
13067  052012  005737  002456          6$:     TST MIXTYP            ;MIX TYPES WITHIN INSTRUCTION?
13068  052016  001011                          BNE 61$               ;BRANCH IF YES
13069  052020  005137  002460                  COM PKPTW             ;NO-SWITCH ALL DESC FROM SIGNED
13070                                                                ;  TO UNSIGNED (OR VICE VERSA)
13071  052024  005737  002460                  TST PKPTW             ;ALL TYPES TESTED?
13072  052030  001002                          BNE 60$               ;BRANCH IF NO
13073  052032  000137  053046                  JMP CFINL             ;EXIT TO IN LINE TESTING
13074  052036  000137  052150          60$:    JMP TYPSET
13075  052042  005237  002460          61$:    INC PKPTW             ;CHANGE TO NEXT MIXED CASE
13076  052046  023727  002462  000001          CMP NDESC,#1          ;IS THERE ONLY 1 DESC FOR THIS INST?
13077  052054  001010                          BNE 7$                ;BRANCH IF NO
13078  052056  032737  000002  002460          BIT #2,PKPTW          ;ALL TYPE MIXTURES TESTED?
13079  052064  001431          62$:    BEQ TYPSET                    ;BRANCH IF NO
13080  052066  005037  002460                  CLR PKPTW             ;CLEANUP FOR NEXT TEST CONDITION
13081  052072  000137  053046                  JMP CFINL             ;EXIT TO TEST IN-LINE INST.
13082
13083  052076  023727  002462  000002  7$:     CMP NDESC,#2          ;ARE THERE 2 DESC. FOR THIS INST?
13084  052104  001004                          BNE 8$                ;BRANCH IF NO
13085  052106  032737  000004  002460          BIT #4,PKPTW          ;ALL TYPE MIXTURES TESTED?
13086  052114  000763                          BR 62$
13087
13088  052116  023727  002462  000003  8$:     CMP NDESC,#3          ;ARE THERE 3 DESC FOR THIS INST?
13089  052124  001404                          BEQ 81$
13090  052126  012737  000001  001114          MOV #1,$MSGTY         ;TELL APT THERE IS A FATAL ERROR      ::REV-C
13091  052134  000000                          HALT                  ;# OF DESCRIPTORS FOR INST UNDER TEST
13092                                                                ;  DOES NOT MAKE SENSE.
13093  052136  032737  000010  002460  81$:    BIT #10,PKPTW
13094  052144  000137  052064                  JMP 62$
13095
13096  052150  000137  041746          TYPSET: JMP NTCTS             ;REPEAT TEST CONDITION WITH A DIFFERENT
13097                                                                ;  DATA TYPE.
13098
13099
13100  052154  005737  002456          ZONED:  TST MIXTYP            ;MIX DATA TYPES WITHIN INST??
```

```
13101  052160  001003                          BNE 1$                  ;BRANCH IF YES
13102  052162  062737  000110  002460          ADD #110,PKPTW
13103  052170  005237  002460          1$:     INC PKPTW
13104  052174  013701  002460          11$:    MOV PKPTW,R1            ;SET STRING 1 DESC TYPE FROM
13105  052200  042701  177770                  BIC #177770,R1          ;  BITS 0,1,2 OF PKPTW
13106  052204  010137  002446                  MOV R1,S1TYPE
13107
13108  052210  013701  002460                  MOV PKPTW,R1            ;SET STRING 2 DESC TYPE FROM
13109  052214  042701  177707                  BIC #177707,R1          ;  BITS 3,4,5 OF PKPTW.
13110  052220  006201                          ASR R1
13111  052222  006201                          ASR R1
13112  052224  006201                          ASR R1
13113  052226  010137  002450                  MOV R1,S2TYPE
13114
13115  052232  013701  002460                  MOV PKPTW,R1            ;SET STRING 3 DESC TYPE FROM
13116  052236  042701  177077                  BIC #177077,R1          ;  BITS 6,7,8 OF PKPTW.
13117  052242  006301                          ASL R1
13118  052244  006301                          ASL R1
13119  052246  000301                          SWAB R1
13120  052250  010137  002452                  MOV R1,S3TYPE
13121
13122  052254  005737  002456                  TST MIXTYP              ;MIX TYPES WITHIN INST?
13123  052260  001016                          BNE 61$                 ;BRANCH IF YES
13124  052262  023727  002460  000666          CMP PKPTW,#666          ;ALL TYPES TESTED?
13125  052270  001327                  2$:     BNE TYPSET              ;BRANCH IF NO
13126  052272  005037  002460          12$:    CLR PKPTW
13127  052276  005037  002446                  CLR S1TYPE
13128  052302  005037  002450                  CLR S2TYPE
13129  052306  005037  002452                  CLR S3TYPE
13130  052312  000137  053046                  JMP CFINL               ;EXIT TO TEST IN-LINE INST
13131
13132  052316  023727  002462  000001  61$:    CMP NDESC,#1            ;IS THERE ONLY 1 DESC FOR THIS INST
13133  052324  001007                          BNE 7$                  ;BRANCH IF NO
13134  052326  013701  002460                  MOV PKPTW,R1
13135  052332  042701  177770                  BIC #177770,R1
13136  052336  020127  000006                  CMP R1,#6               ;ALL TYPES TESTED?
13137  052342  000752                          BR 2$
13138
13139  052344  023727  002462  000002  7$:     CMP NDESC,#2            ;ARE THERE 2 DESC FOR THIS INST?
13140  052352  001022                          BNE 8$                  ;BRANCH IF NO
13141  052354  013701  002460                  MOV PKPTW,R1
13142  052360  042701  177770                  BIC #177770,R1
13143  052364  020127  000006                  CMP R1,#6
13144  052370  001267                          BNE TYPSET
13145  052372  062737  000002  002460          ADD #2,PKPTW
13146  052400  013701  002460                  MOV PKPTW,R1
13147  052404  042701  177707                  BIC #177707,R1
13148  052410  020127  000060                  CMP R1,#60              ;ALL TYPE MIXTURES TESTED?
13149  052414  001267                          BNE 11$
13150  052416  000725                          BR 12$
13151
13152  052420  023727  002462  000003  8$:     CMP NDESC,#3            ;ARE THERE 3 DESC FOR THIS INST?
13153  052426  001404                          BEQ 81$                 ;BRANCH IF YES
13154  052430  012737  000001  001114          MOV #1,$MSGTY           ;TELL APT THERE IS A FATAL ERROR        ;;REV-C
```

```
13155  052436  000000                          HALT                    ;# OF DESC FOR INST UNDER TEST DOES
13156                                                                  ;  NOT MAKE SENSE.
13157  052440  013701  002460          81$:    MOV PKPTW,R1
13158  052444  042701  177770                  BIC #177770,R1
13159  052450  020127  000006                  CMP R1,#6
13160  052454  001235                          BNE TYPSET
13161  052456  062737  000002  002460          ADD #2,PKPTW
13162  052464  013701  002460                  MOV PKPTW,R1
13163  052470  042701  177707                  BIC #177707,R1
13164  052474  020127  000060                  CMP R1,#60
13165  052500  001235                          BNE 11$
13166  052502  062737  000020  002460          ADD #20,PKPTW
13167  052510  013701  002460                  MOV PKPTW,R1
13168  052514  042701  177077                  BIC #177077,R1
13169  052520  020127  000600                  CMP R1,#600             ;ALL TYPE MIXTURES TESTED?
13170  052524  001223                          BNE 11$
13171  052526  000661                          BR 12$
13172
13173  052530  005237  002460          MIXDPZ: INC PKPTW
13174  052534  005737  002456                  TST MIXTYP              ;MIX TYPES WITHIN INST?
13175  052540  001407                          BEQ 1$                  ;BRANCH IF NO
13176  052542  032737  000007  002460          BIT #7,PKPTW            ;YES - IF PACK DATA TYPE=0,CHANGE IT TO 6.
13177  052550  001003                          BNE 1$
13178  052552  052737  000006  002460          BIS #6,PKPTW
13179  052560  013701  002460          1$:     MOV PKPTW,R1            ;SET STRING 1 DESC TYPE FROM
13180  052564  042701  177770                  BIC #177770,R1          ;   BITS 0,1,2 OF PKPTW
13181  052570  010137  002446                  MOV R1,S1TYPE
13182
13183  052574  013701  002460                  MOV PKPTW,R1            ;SET STRING 2 DESC TYPE FROM
13184  052600  042701  177707                  BIC #177707,R1          ;   BITS 3,4,5 OF PKPTW
13185  052604  006201                          ASR R1
13186  052606  006201                          ASR R1
13187  052610  006201                          ASR R1
13188  052612  010137  002450                  MOV R1,S2TYPE
13189
13190  052616  005737  002456                  TST MIXTYP              ;MIX TYPES WITHIN INST?
13191  052622  001016                          BNE 61$                 ;BRANCH IF YES
13192  052624  023727  002460  000010          CMP PKPTW,#10           ;ALL TYPES TESTED?
13193  052632  001016                  60$:    BNE 62$                 ;BRANCH IF NO
13194  052634  012737  000006  002460          MOV #06,PKPTW
13195  052642  012737  000006  002446          MOV #6,S1TYPE           ;INITIALIZE S1TYPE & S2TYPE FOR NEXT TEST CONDITION
13196  052650  005037  002450                  CLR S2TYPE
13197  052654  000137  053046                  JMP CFINL               ;EXIT TO TEST IN-LINE INST
13198
13199  052660  023727  002460  000066  61$:    CMP PKPTW,#66
13200  052666  000761                          BR 60$
13201  052670  000137  052150          62$:    JMP TYPSET
13202
13203  052674  005237  002460          MIXDZP: INC PKPTW
13204  052700  005737  002456                  TST MIXTYP              ;MIX TYPES WITHIN INST??
13205  052704  001412                          BEQ 1$                  ;BRANCH IF NO
13206  052706  013701  002460                  MOV PKPTW,R1            ;YES - IF ZONED DATA TYPE=6,CHANGE IT TO 0.
13207  052712  042701  177770                  BIC #177770,R1
13208  052716  020127  000006                  CMP R1,#6
```

```
13209  052722  001003                          BNE 1$
13210  052724  062737  000002  002460          ADD #2,PKPTW
13211  052732  013701  002460          1$:     MOV PKPTW,R1          ;SET STRING 1 DESC TYPE FROM
13212  052736  042701  177770                  BIC #177770,R1        ;  BITS 0,1,2 OF PKPTW
13213  052742  010137  002446                  MOV R1,S1TYPE
13214
13215  052746  013701  002460                  MOV PKPTW,R1          ;SET STRING 2 DESC TYPE FROM
13216  052752  042701  177707                  BIC #177707,R1        ;  BITS 3,4,5 OF PKPTW
13217  052756  006201                          ASR R1
13218  052760  006201                          ASR R1
13219  052762  006201                          ASR R1
13220  052764  010137  002450                  MOV R1,S2TYPE
13221  052770  005737  002456                  TST MIXTYP            ;MIX TYPES WITHIN INST?
13222  052774  001016                          BNE 61$               ;BRANCH IF YES
13223  052776  023727  002460  000066          CMP PKPTW,#66         ;ALL TYPES TESTED?
13224  053004  001016                  60$:     BNE 62$               ;BRANCH IF NO
13225  053006  012737  000060  002460          MOV #60,PKPTW
13226  053014  005037  002446                  CLR S1TYPE
13227  053020  012737  000006  002450          MOV #6,S2TYPE
13228  053026  000137  053046                  JMP CFINL             ;EXIT TO TEST IN-LINE INST
13229
13230  053032  022737  000100  002460  61$:     CMP #100,PKPTW
13231  053040  000761                          BR 60$
13232  053042  000137  052150          62$:     JMP TYPSET
13233
13234  053046  032737  000100  050164  CFINL:  BIT #100,TINST        ;INST TYPE (REG OR IN-LINE)?
13235  053054  001022                          BNE NXTTC             ;BRANCH IF IN-LINE TYPE
13236  053056  005737  001764                  TST RANDOM            ;RANDOM EXERCISE MODE?
13237  053062  001407                          BEQ 1$                ;BRANCH IF NO
13238  053064  004737  064334                  JSR PC,RN             ;GET A RANDOM #
13239  053070  042700  177770                  BIC #177770,R0        ;LOOK AT 3 LEAST SIGN BITS
13240  053074  020027  000003                  CMP R0,#3             ;IF THEY ARE = TO 3 (ARBITRARY CONSTANT) THEN DO IN-LINE
13241  053100  001010                          BNE NXTTC
13242  053102  052737  000100  050164  1$:     BIS #100,TINST        ;SWITCH REG OP-CODE AT TINST TO IN-LINE OP-CODE.
13243  053110  052737  000100  002136          BIS #100,FATAL        ;SET IN-LINE FIELD IN FATAL ERROR INDICATOR WORD
13244  053116  000137  041470                  JMP NTC               ;REPEAT TEST CONDITION WITH IN-LINE OPCODE.
13245  053122  042737  000100  050164  NXTTC:  BIC #100,TINST
13246  053130  042737  000100  002136          BIC #100,FATAL        ;CLR IN-LINE FIELD IN FATAL ERROR INDICATOR
13247  053136  005737  042176                  TST MTYPE             ;IF TYPE = 0 THEN READY FOR NEXT INPUT TABLE ENTRY
13248  053142  001402                          BEQ 1$                ;BRANCH IF TYPE NOT = 0
13249  053144  000137  053442                  JMP RFNITE
13250  053150  013737  001656  002132  1$:     MOV IPNU,VIP          ;SETUP A POINTER TO LAST PARAMETER IN
13251  053156  063737  001656  002132          ADD IPNU,VIP          ;  INPUT TABLE ENTRY.
13252  053164  013703  002132          UPTP:   MOV VIP,R3
13253  053170  062703  001566                  ADD #PTP,R3           ;R3 POINTS TO PARAMETER TABLE POINTER
13254  053174  013701  002140                  MOV INPTP,R1
13255  053200  063701  002132                  ADD VIP,R1
13256  053204  062701  000002                  ADD #2,R1
13257  053210  005711                          TST (R1)              ;(R1) POINTS TO 1ST ENTRY IN PARAMTERE TABLE
13258  053212  001464                          BEQ TNXP
13259  053214  017137  000000  002134          MOV @(R1),PTW1        ;PTW1 CONTAINS TYPE,SIZE, AND # OF ENTRIES
13260                                          ;  IN PARAMETER TABLE
13261  053222  042737  177400  002134          BIC #177400,PTW1      ;STRIP OFF TYPE AND ENTRY SIZE
13262  053230  122737  000001  002134          CMPB #1,PTW1          ;# OF ENTRIES = 1?
```

```
13263  053236  001452                          BEQ TNXP                ;YES - NO UPDATING. TRY NEXT PARAMETER
13264  053240  005737  002134                  TST PTW1                ;# OF ENTRIES = 0?
13265  053244  001447                          BEQ TNXP                ;YES - NO UPDATING. TRY NEXT PARAMETER
13266  053246  017102  000000                  MOV @(R1),R2            ;PARAMETER TABLE CONTAINS MORE THAN 1 ENTRY.
13267  053252  042702  037777                  BIC #037777,R2          ;LOOK AT ENTRY TYPE
13268  053256  005702                          TST R2
13269  053260  001401                          BEQ FLE                 ;FIXED LENGTH ENTRIES
13270  053262  000447                          BR VLE                  ;VARIABLE LENGTH ENTRIES
13271
13272  053264                          FLE:                            ;PARAMETER TABLE CONTAINS FIXED
13273                                                                  ;  LENGTH ENTRIES.
13274  053264  017137  000000  002134          MOV @(R1),PTW1
13275  053272  000337  002134                  SWAB PTW1
13276  053276  113704  002134                  MOVB PTW1,R4            ;LOAD R4 WITH ENTRY SIZE IN WORDS
13277  053302  006304                          ASL R4                  ;CONVERT SIZE IN WORDS TO BYTES
13278  053304  005002                          CLR R2
13279  053306  000337  002134                  SWAB PTW1
13280  053312  042737  177400  002134          BIC #177400,PTW1        ;PTW1 CONTAINS # OF ENTRIES IN
13281                                                                  ;  PARAMETER TABLE.
13282  053320  005337  002134          1$:     DEC PTW1                ;CALCULATE SIZE OF PARAMETER TABLE
13283  053324  005737  002134                  TST PTW1                ; SIZE = ENTRY SIZE X # OF ENTRIES
13284  053330  001402                          BEQ GPTESZ              ;CALCULATION COMPLETE - R2 CONTAINS SIZE
13285                                                                  ;  OF PARAMETER TABLE (MINUS 1 ENTRY)
13286  053332  060402                          ADD R4,R2
13287  053334  000771                          BR 1$
13288
13289  053336                          GPTESZ:
13290  053336  061102                          ADD (R1),R2             ;UPDATE R2 TO CONTAIN ADDRESS OF
13291  053340  062702  000002                  ADD #2,R2               ;  LAST ENTRY IN PARAMETER TABLE
13292  053344  021302                          CMP (R3),R2
13293  053346  001403                          BEQ RESPTP              ;CURRENT PTP POINTS TO LAST ENTRY IN
13294                                                                  ;  PARAMETER TABLE.  RESET TO 1ST ENTRY
13295  053350  060413                          ADD R4,(R3)             ;STILL MORE ENTRIES TO TRY IN PARAMETER
13296                                                                  ;  TABLE. UPDATE PTP TO NEXT ENTRY.
13297  053352  000137  041470                  JMP NTC                 ;TRY NEXT TEST CONDITON FOR SAME CIS INST.
13298
13299  053356                          RESPTP:                         ;RESET PTP BACK TO 1ST ENTRY IN TABLE
13300  053356  011113                          MOV (R1),(R3)
13301  053360  062713  000002                  ADD #2,(R3)
13302  053364  162737  000002  002132  TNXP:   SUB #2,VIP              ;BACKUP TO NEXT PARAMETER TABLE POINTER
13303                                                                  ;  AND UPDATE IT.
13304  053372  005737  002132                  TST VIP
13305  053376  001421                          BEQ RFNITE              ;ALL TEST CONDITIONS ASSOCIATED WITH CURRENT
13306                                                                  ;  INPUT TABLE ENTRY EXERCISED.
13307  053400  000671                          BR UPTP
13308
13309  053402                          VLE:                            ;PARAMETER TABLE CONTAINS VARIABLE LENGTH ENTRIES
13310  053402  113704  002134                  MOVB PTW1,R4            ;R4 CONTAINS # OF ENTRIES IN PARAMETER TABLE
13311  053406  005304                          DEC R4                  ;DETERMINE ADDRESS OF LAST ENTRY IN PARAMETER TABLE
13312  053410  011102                          MOV (R1),R2             ;R2 POINTS TO 1ST WORD IN PARAMETER TABLE
13313  053412  005722                  1$:     TST (R2)+               ;SEARCH FOR 0 WORDS
13314  053414  001376                          BNE 1$
13315  053416  005304                          DEC R4                  ;AT LAST ENTRY YET?
13316  053420  001374                          BNE 1$                  ;NO
```

```
13317  053422  021302                      CMP (R3),R2          ;YES - IS CURRENT PTP POINTING TO LAST ENTRY?
13318  053424  001754                      BEQ RESPTP           ;YES - RESET PTP TO 1ST ENTRY
13319  053426  011304                      MOV (R3),R4          ;NO - UPDATE PTP TO NEXT ENTRY.
13320  053430  005724              2$:     TST (R4)+
13321  053432  001376                      BNE 2$
13322  053434  010413                      MOV R4,(R3)
13323  053436  000137  041470              JMP NTC              ;TRY NEXT TEST CONDITION FOR SAME INPUT
13324                                      ;  TABLE ENTRY.
13325
```

```
13327  053442                          RFNITE:
13328  053442  005737  001764                  TST RANDOM          ;READY FOR NEXT INPUT TABLE ENTRY.
13329  053446  001402                          BEQ 2$              ;RANDOM EXERCISE MODE?
13330  053450  000137  041052                  JMP NITE            ;BRANCH IF NO
13331  053454  013701  002140          2$:     MOV INPTP,R1        ;SAVE INPUT TABLE POINTER
13332  053460  063737  001656  002140  3$:     ADD IPNU,INPTP
13333  053466  063737  001656  002140          ADD IPNU,INPTP      ;UPDATE INPTP TO 1ST WORD OF NEXT ENTRY.
13334  053474  062737  000004  002140          ADD #4,INPTP
13335  053502  005777  126432                  TST @INPTP          ;NOTE: TO ELIMINATE AN INPUT TABLE FROM
13336                                          ; A TEST RUN SET THE FIRST WORD IN THE
13337                                          ; INPUT TABLE TO 177777
13338  053506  100764                          BMI 3$              ;IF MINUS SKIP THIS TABLE
13339  053510  005777  126424                  TST @INPTP
13341  053514  001440                          BEQ 5$              ;GO ON TO PROBEAHEAD ABORT TESTS
13346  053516  005737  002212                  TST QVMODE          ;RUNNING IN QV MODE?
13347  053522  001406                          BEQ 4$              ;BRANCH IF NO
13348  053524  013700  002140                  MOV INPTP,R0        ;LOOK AT ENTRY TYPE WORD
13349  053530  033760  002216  000002          BIT PTQV,2(R0)      ;IS QV MODE BIT ASSOCIATED WITH PROCESSOR
13350                                          ;   TYPE UNDER TEST SET IN ENTRY TYPE WORD?
13351  053536  001750                          BEQ 3$              ;BRANCH IF NO (SKIP TABLE)
13352  053540  021177  126374          4$:     CMP (R1),@INPTP     ;NEXT INST FOR TESTING = CURRENT INST?
13353  053544  001422                          BEQ 1$              ;BRANCH IF YES
13354  053546  005737  002474                  TST ONEINS          ;SINGLE INSTRUCTION TESTING?
13355  053552  001023                          BNE DONE            ;BRANCH IF YES
13356  053554  005737  002050                  TST PROGD           ;PROGRESS DISPLAY?
13357  053560  001014                          BNE 1$              ;BRANCH IF NO
13358  053562  017701  126352                  MOV @INPTP,R1       ;SETUP PTR TO PROPER MESSAGE HEADER
13359  053566  006301                          ASL R1
13360  053570  062701  070704                  ADD #INEM,R1
13361  053574  011137  002146                  MOV (R1),EMPTR
13363  053600  042737  000007  050164          BIC #7,TINST        ;CLEAR REGISTER FIELD OF L3D INST OP CODE
13364                                          ;   (FOR PROGRESS DISPLAY ONLY)
13365  053606  004737  064240                  JSR PC,IDINST       ;IDENTIFY NEXT INSTRUCTION TO BE TESTED
13367  053612  000137  041052          1$:     JMP NITE
13369  053616  000137  112422          5$:     JMP PROBAH
13371  053622                          DONE:
13372  053622  005037  001420                  CLR TOTTC
13373  053626  005037  001416                  CLR TOTTCH
13374  053632  005237  001122                  INC $PASS           ;INCREMENT PASS COUNTER IN APT MAILBOX
13375  053636  005037  001120                  CLR $TESTN
13376  053642  005737  002212                  TST QVMODE          ;IF IN QV MODE TYPE END OF QV PASS INDICATOR
13377  053646  001403                          BEQ 1$
13378  053650  104401                          TYPE
13379  053652  015751                          ENDQP
13380  053654  000402                          BR 2$
13382  053656  104401          1$:     TYPE
13383  053660  015661                          ENDP                ;TYPE NORMAL END OF PASS INDICATOR
13388  053662  013700  000042          2$:     MOV @#42,R0
13390  053666  001407                          BEQ HERE
13395  053670  000005                          RESET
13396  053672  004710                  ENDAD:  JSR PC,(R0)
13397  053674  000240                          NOP
13398  053676  000240                          NOP
13399  053700  000240                          NOP
```

```
13405  053702  000137  037066            JMP START
13407  053706                    HERE:
13409  053706  005737  002100            TST FSRUN               ;NORMAL FIELD SERVICE RUN?
13410  053712  001445                    BEQ NFS                 ;BRANCH IF NO
13411  053714  005737  002212            TST QVMODE              ;RUNNING IN QV MODE
13412  053720  001411                    BEQ 1$                  ;BRANCH IF NO
13413  053722  005737  001754            TST N200M               ;PROG STARTED AT LOC 200?
13414  053726  001404                    BEQ 2$                  ;BRANCH IF NO
13415  053730  005037  002212            CLR QVMODE
13416  053734  000137  037456            JMP COMST
13417  053740  000137  037074      2$:   JMP QVST
13418  053744  104401              1$:   TYPE
13419  053746  016313                    FSHDR2                  ;PRINT ENTERING RANDOM MODE HEADER
13420  053750  104401                    TYPE
13421  053752  016347                    FSHDR3
13422  053754  104401                    TYPE
13423  053756  016430                    FSHDR4
13424  053760  104401                    TYPE
13425  053762  016514                    FSHDR5
13427  053764  012737  000001  001660    MOV #1,INCSQ1           ;INITIALIZE BUFFER INITIALIZATION CONSTANTS
13428  053772  012737  000002  001662    MOV #2,INCSQ2
13429  054000  012737  177777  001764    MOV #177777,RANDOM      ;SET RANDOM MODE FLAG
13430  054006  012737  072776  073052    MOV #IDUM,INPTBL        ;POINT TO DUMMY INPUT TABLE
13431  054014  013737  073052  002140    MOV INPTBL,INPTP
13432  054022  000137  041052            JMP NITE
13433  054026  000137  037276      NFS:  JMP DVTST
13434
13435  054032                    FC00:                           ;FLOW COMMAND = 00 -IGNORE ENTRY.
13436  054032  000137  042414            JMP FCRTN
13437
13438
13439                                     ;SUBROUTINES TO EXTRACT VARIOUS DATA FIELDS FROM FLOW TABLE ENTRY.
13440
13441  054036                    PF1:                            ;LOAD PTPTR WITH CONTANTS OF PTP
13442                                                            ;  SPECIFIED IN THE PF1 FIELD OF FLOW
13443                                                            ;  TABLE ENTRY.
13444  054036  017701  125704            MOV @FLOPTR,R1          ;FLOPTR POINTS TO FLOW TABLE ENTRY
13445  054042  032701  004000            BIT #004000,R1          ;SAVE STRING INSERTED FOR POSSIBLE ERROR PRINTOUT?
13446  054046  001405                    BEQ 1$
13447  054050  042701  004000            BIC #004000,R1          ;YES
13448  054054  012737  177777  002502    MOV #177777,SAVSRF      ;SET SAVE STRING FLAG
13449  054062  042701  170077      1$:   BIC #170077,R1          ;STRIP OFF ALL BUT DESIRED FIELD
13450  054066  006301                    ASL R1
13451  054070  006301                    ASL R1
13452  054072  000301                    SWAB R1                 ;ADJUST DESIRED FIELD TO BIT 0
13453  054074  006301                    ASL R1
13454  054076  062701  001566            ADD #PTP,R1             ;ADD # IN FIELD TO TOP OF PTP TABLE
13455  054102  011137  002142            MOV (R1),PTPTR          ;SAVE CONTENTS OF DESIRED PTP IN PTPTR
13456  054106  000207                    RTS PC
13457
13458  054110                    PF2:                            ;SAME AS PF1 SUBROUTINE EXCEPT FOR FIELD.
13459  054110  017701  125632            MOV @FLOPTR,R1
13460  054114  042701  177700            BIC #177700,R1
13461  054120  006301                    ASL R1
```

```
13462  054122  062701  001566          ADD #PTP,R1
13463  054126  011137  002142          MOV (R1),PTPTR
13464  054132  000207                  RTS PC
13465
13466  054134                  RF1:                    ;LOAD R1 WITH ADDRESS OF TEST
13467                                                  ;  OPERAND SPECIFIED.
13468  054134  004737  054146          JSR PC,RF1X     ;GET FIELD ONE CONTENTS
13469  054140  062701  003634          ADD #TRN,R1     ;ADD IN ADDRESS OF TEST OPERAND TABLE
13470  054144  000207                  RTS PC
13471
13472  054146                  RF1X:                   ;GET FIELD ONE CONTENTS FROM FLOW TABLE ENTRY
13473  054146  017701  125574          MOV @FLOPTR,R1  ;FLOPTR POINTS TO FLOW TABLE ENTRY
13474  054152  042701  170777          BIC #170777,R1  ;STRIP OFF ALL BUT DESIRED FIELD
13475  054156  006201                  ASR R1
13476  054160  000301                  SWAB R1         ;RIGHT ADJUST FIELD
13477  054162  006301                  ASL R1
13478  054164  000207                  RTS PC
13479
13480  054166                  RF2:                    ;SAME AS RF1 SUBROUTINE EXCEPT FOR FIELD.
13481  054166  004737  054200          JSR PC,RF2X
13482  054172  062701  003634          ADD #TRN,R1
13483  054176  000207                  RTS PC
13484
13485  054200                  RF2X:                   ;SAME AS RF2X SUBROUTINE EXCEPT FOR FIELD.
13486  054200  017701  125542          MOV @FLOPTR,R1
13487  054204  042701  177077          BIC #177077,R1
13488  054210  006301                  ASL R1
13489  054212  006301                  ASL R1
13490  054214  000301                  SWAB R1
13491  054216  006301                  ASL R1
13492  054220  000207                  RTS PC
13493
13494  054222                  RF3:                    ;SAME AS RF1 SUBROUTINE EXCEPT FOR FIELD
13495  054222  004737  054234          JSR PC,RF3X
13496  054226  062701  003634          ADD #TRN,R1
13497  054232  000207                  RTS PC
13498
13499  054234                  RF3X:                   ;SAME AS RF1X SUBROUTINE EXCEPT FOR FIELD
13500  054234  017701  125506          MOV @FLOPTR,R1
13501  054240  042701  177707          BIC #177707,R1
13502  054244  006201                  ASR R1
13503  054246  006201                  ASR R1
13504  054250  000207                  RTS PC
13505
13506  054252                  RF4:                    ;SAME AS RF1 SUBROUTINE EXCEPT FOR FIELD
13507  054252  004737  054264          JSR PC,RF4X
13508  054256  062701  003634          ADD #TRN,R1
13509  054262  000207                  RTS PC
13510
13511  054264                  RF4X:                   ;SAME AS RF1X SUBROUTINE EXCEPT FOR FIELD
13512  054264  017701  125456          MOV @FLOPTR,R1
13513  054270  042701  177770          BIC #177770,R1
13514  054274  006301                  ASL R1
13515  054276  000207                  RTS PC
```

```
13516
13517  054300                          RFNX:
13518
13519
13520  054300  005237  002236                  INC NXFLD
13521  054304  022737  000001  002236          CMP #1,NXFLD
13522  054312  001003                          BNE 1$
13523  054314  004737  054146                  JSR PC,RF1X
13524  054320  000426                          BR 10$
13525  054322  022737  000002  002236  1$:     CMP #2,NXFLD
13526  054330  001003                          BNE 2$
13527  054332  004737  054200                  JSR PC,RF2X
13528  054336  000417                          BR 10$
13529  054340  022737  000003  002236  2$:     CMP #3,NXFLD
13530  054346  001003                          BNE 3$
13531  054350  004737  054234                  JSR PC,RF3X
13532  054354  000410                          BR 10$
13533  054356  022737  000004  002236  3$:     CMP #4,NXFLD
13534  054364  001003                          BNE 9$
13535  054366  004737  054264                  JSR PC,RF4X
13536  054372  000401                          BR 10$
13537  054374  005001                  9$:     CLR R1
13538  054376  000207                  10$:    RTS PC
13539
13540  054400                          RFN:
13541
13542
13543
13544  054400  005237  002236                  INC NXFLD
13545  054404  022737  000001  002236          CMP #1,NXFLD
13546  054412  001003                          BNE 1$
13547  054414  004737  054134                  JSR PC,RF1
13548  054420  000427                          BR 10$
13549  054422  022737  000002  002236  1$:     CMP #2,NXFLD
13550  054430  001003                          BNE 2$
13551  054432  004737  054166                  JSR PC,RF2
13552  054436  000420                          BR 10$
13553  054440  022737  000003  002236  2$:     CMP #3,NXFLD
13554  054446  001003                          BNE 3$
13555  054450  004737  054222                  JSR PC,RF3
13556  054454  000411                          BR 10$
13557  054456  022737  000004  002236  3$:     CMP #4,NXFLD
13558  054464  001003                          BNE 9$
13559  054466  004737  054252                  JSR PC,RF4
13560  054472  000402                          BR 10$
13561  054474  012701  003634          9$:     MOV #TRN,R1
13562  054500  000207                  10$:    RTS PC
13563
13564  054502                          FC15:
13565
13566
13567
13568
13569  054502  004737  054036                  JSR PC,PF1

;SUBROUTINE TO RETURN CONTENTS OF FLOW
; TABLE ENTRY FIELD POINTED TO BY THE
; CONTENTS OF NXFLD+1.

;FIELD REQUESTED = 1?
;BRANCH IF NO
;GET CONTENTS OF FIELD ONE.
;EXIT
;FIELD REQUESTED=2?
;BRANCH IF NO
;GET CONTENTS OF FIELD 2
;EXIT
;FIELD REQUESTED = 3?
;BRANCH IF NO
;GET CONTENTS OF FIELD 3
;EXIT
;FIELD REQUESTED = 4?
;BRANCH IF NO
;GET CONTENTS OF FIELD 4
;EXIT
;FIELD REQUESTED INVALID - RETURN 0.

;SUBROUTINE TO RETURN CONTENTS OF FLOW
; TABLE ENTRY FIELD PLUS TEST OPERAND TABLE
; OFFSET POINTED TO BY THE
; CONTENTS OF NXFLD+1.

;FIELD REQUESTED = 1?
;BRANCH IF NO
;GET CONTENTS OF FIELD ONE PLUS TRN OFFSET.
;EXIT
;FIELD REQUESTED=2?
;BRANCH IF NO
;GET CONTENTS OF FIELD 2 PLUS TRN OFFSET.
;EXIT
;FIELD REQUESTED = 3?
;BRANCH IF NO
;GET CONTENTS OF FIELD 3 PLUS TRN OFFSET.
;EXIT
;FIELD REQUESTED = 4?
;BRANCH IF NO
;GET CONTENTS OF FIELD 4 PLUS TRN OFFSET.
;EXIT
        ;FIELD REQUESTED INVALID - RETURN #TRN.

;FLOW COMMAND = 15 - SETUP SPECIAL HANDLING WORD
;  BIT 0 = 1 MEANS SKIP 04 FLOW COMMANDS
;  BIT 1 = 1 MEANS 07 FLOW COMMAND IGNORE BIT 15
;       OF STRING LENGTH
;  BIT 2 = 1 MEANS DON'T CHECK BUFFER RESULTS
;FORM PARAMETER TABLE POINTER TO SPECIAL HANDLING REQUES
```

```
13570  054506  017737  125430  002144          MOV @PTPTR,SPHAND       ;COPY SPECIAL HANDLING REQUEST INTO SPECIAL HANDLING WOR
13571  054514  000137  042414                  JMP FCRTN
13572
```

```
13574                                   .SBTTL          SETUP MACHINE DEPENDENT CONSTANTS
13575                                   ;
13576                                   ;SIZE FOR PROCESSOR TYPE - SETUP MACHINE DEPENDENT CONSTANTS BASED UPON RESULT.
13577                                   ;
13578  054520                           SIZEPT:
13579  054520  012737  055036  000010           MOV #3$,@#RESVEC        ;SETUP RESERVED INST TRAP VECTOR
13580                                                                   ; IN CASE MACHINE UNDER TEST DOES NOT HAVE MFPT
13581  054526  005037  000012           CLR @#RESVEC+2
13582  054532  000007                   MFPT                    ;WHAT IS THE PROCESSOR TYPE?
13583  054534  123700  001710           CMPB EL2324,R0
13584  054540  001525                   BEQ 6$                  ;BRANCH IF PROCESSOR = 11/23 OR 11/24
13585  054542  123700  001704           CMPB EL74,R0
13586  054546  001025                   BNE 1$                  ;BRANCH IF NOT AN 11/74 TYPE PROCESSOR
13587  054550  005737  001122           TST $PASS
13588  054554  001002                   BNE 10$
13589  054556  104401                   TYPE                    ;TYPE 11/74 TYPE PROCESSOR (1ST PASS ONLY)
13590  054560  017066                   MPT74
13591  054562  012737  177777  002162  10$:     MOV #177777,MMFLG       ;SET MEM MANAGEMENT FLAG SIGNALING THAT SYS
13592                                                                   ; UNDER TEST HAS 11/70 TYPE MEM MGMT
13593  054570  012737  000003  002170           MOV #3,NMODES           ;PROC UNDER TEST HAS 3 MODES (K,S,U)
13594  054576  012737  177777  002064           MOV #177777,TWOSET      ;PROCESSOR UNDER TEST HAS 2 REGISTER SETS
13595  054604  012737  000002  002216           MOV #2,PTQV             ;INPUT TABLE ENTRY TYPE WORD BIT 1
13596                                                                   ;   IDENTIFIES TABLE RUN IN QV MODE FOR 11/74
13597                                                                   ;   (1=RUN,0=SKIP)
13598  054612  012737  000003  003042           MOV #3,LTCDLY           ;INITIALIZE COUNTER USED BY LINE TIME CLOCK
13599                                                                   ;   ROUTINES - COUNT IS A MEASURE OF
13600                                                                   ;   TIME REMAINING BEFORE INTERRUPT FROM
13601                                                                   ;   LTC WHEN STARTING EXECUTION OF CIS
13602                                                                   ;   INSTRUCTION UNDER TEST.
13603  054620  000571                   BR 4$
13604  054622  123700  001706  1$:      CMPB EL44,R0            ;IS THIS AN 11/44?
13605  054626  001024                   BNE 2$                  ;BRANCH IF NO
13606  054630  005737  001122           TST $PASS
13607  054634  001002                   BNE 12$
13608  054636  104401                   TYPE                    ;TYPE 11/44 PROCESSOR (1ST PASS ONLY)
13609  054640  017044                   MPT44
13610  054642  012737  177777  002162  12$:     MOV #177777,MMFLG       ;SET MEM MGMT FLAG
13611  054650  012737  000003  002170           MOV #3,NMODES           ;PROC UNDER TEST HAS 3 MODES
13612  054656  005037  002064  11$:      CLR TWOSET              ;INITIALIZE FOR SINGLE REGISTER SET
13613  054662  012737  000002  002216           MOV #2,PTQV             ;INPUT TABLE ENTRY TYPE WORD BIT 2
13614                                                                   ;  IDENTIFIES TABLE RUN IN QV MODE FOR 11/44
13615  054670  012737  000013  003042           MOV #13,LTCDLY          ;INITIALIZE COUNTER USED FOR LTC
13616  054676  000542                   BR 4$
13617  054700  005037  002162  2$:      CLR MMFLG
13618  054704  005737  001122           TST $PASS
13619  054710  001002                   BNE 13$
13620  054712  104401                   TYPE                    ;TYPE NO MEM MGMT AVAILABLE (1ST PASS ONLY)
13621  054714  017150                   NMM
13622  054716                           13$:
13624  054716  012737  000240  060662           MOV #NOP,PCIS2          ;OVERWRITE ACCESS TO MEM MGMT REGISTERS
13625  054724  012737  000240  060664           MOV #NOP,PCIS2+2
13626  054732  012737  000240  060706           MOV #NOP,PCIS1
13627  054740  012737  000240  060710           MOV #NOP,PCIS1+2
13629  054746  012737  000405  062662           MOV #405,LTCIS
```

```
13630  054754  012737  000240  060226          MOV #NOP,ILLSER
13631  054762  012737  000240  060230          MOV #NOP,ILLSER+2
13632  054770  012737  000240  060100          MOV #NOP,HLTSER
13633  054776  012737  000240  060102          MOV #NOP,HLTSER+2
13634  055004  012737  000002  002170          MOV #2,NMODES
13635  055012  000721                          BR 11$                  ;MACHINE TYPE UNKNOWN - DEFUAULT TO SINGLE
13636                                                                  ;  REG SET ,NO MEM MGMT, 2 PROC MODES (K & U)
13637                                                                  ; AND A LTC DELAY OF 13
13638                                                                  ;(NEW MACHINES MAY REQUIRE CHANGES HERE)
13639  055014  005737  001122          6$:     TST $PASS
13640  055020  001010                          BNE 7$
13641  055022  012737  030071  016304          MOV #'90,FSHDR1+24      ;INSERT PROPER 11/24 RUN TIME IN HEADER MESSAGE
13642  055030  104401                          TYPE                    ;TYPE 11/23 OR 11/24 PROCESSOR (1ST PASS ONLY)
13643  055032  017115                          MPT2324
13644  055034  000402                          BR 7$
13645  055036  005726                  3$:     TST (SP)+               ;FIX UP STACK
13646  055040  005726                          TST (SP)+
13647  055042  012737  055110  000004  7$:     MOV #33$,@#ERRVEC       ;DOES MACHINE UNDER TEST HAVE (11/34 TYPE) MEM MGMT?
13648  055050  005737  172340                  TST @#KIPAR0            ;IF SO NO TRAP HERE
13649  055054  005737  177640                  TST @#UIPAR0            ;IF SO NO TRAP HERE
13650  055060  012737  055116  000004          MOV #34$,@#ERRVEC
13651  055066  005737  172240                  TST @#SIPAR0            ;IF SO, TRAP HERE
13652  055072  000702                          BR 2$
13653  055074  012737  055124  000004  5$:     MOV #35$,@#ERRVEC       ;IF SO, TRAP HERE
13654  055102  005737  172360                  TST @#KDPAR0
13655  055106  000674                          BR 2$
13656  055110  005726                  33$:    TST (SP)+               ;FIX UP STACK
13657  055112  005726                          TST (SP)+
13658  055114  000671                          BR 2$
13659  055116  005726                  34$:    TST (SP)+               ;FIX UP STACK
13660  055120  005726                          TST (SP)+
13661  055122  000764                          BR 5$
13662  055124  005726                  35$:    TST (SP)+               ;FIX UP STACK
13663  055126  005726                          TST (SP)+
13664  055130  005737  001122                  TST $PASS
13665  055134  001002                          BNE 14$
13666  055136  104401                          TYPE                    ;TYPE 'MEMORY MANAGEMENT ON SYS UNDER TEST''(1ST PASS ONL
13667  055140  016761                          MPT34
13668  055142  012737  000002  002170  14$:     MOV #2,NMODES           ;PROC = 11/23 OR 11/24 OR 11/34
13669  055150  012737  177777  002162          MOV #177777,MMFLG
13670  055156  005037  002064                  CLR TWOSET
13671  055162  012737  000002  002216          MOV #2,PTQV
13672  055170  012737  177777  002160          MOV #177777,PT34
13673  055176  012737  000013  003042          MOV #13,LTCDLY
13674  055204  012737  060226  000010  4$:     MOV #ILLSER,@#RESVEC    ;RESTORE RESERVED INST TRAP CATCHER
13675  055212  012737  055234  000004          MOV #50$,@#ERRVEC       ;CHECK FOR A CPU ERROR REG ON UUT       ;;REV-C
13676  055220  005737  177766                  TST @#177766            ;IF NONE TRAP HERE                      ;;REV-C
13677  055224  012737  177777  001742          MOV #177777,CERFLG      ;SET FLAG INDICATING EXISTANCE          ;;REV-C
13678  055232  000403                          BR 51$                                                          ;;REV-C
13679  055234  005037  001742          50$:     CLR CERFLG              ;CLR FLAG: INDICATES NO ERR REG         ;;REV-C
13680  055240  022626                          CMP (SP)+,(SP)+         ;CLEAN UP STACK                         ;;REV-C
13681  055242  012737  060100  000004  51$:     MOV #HLTSER,@#ERRVEC    ;RESTORE HALT SERVICE TRAP CATCHER      ;;REV-C
13682  055250  000207                          RTS PC
```

```
13684                                   .SBTTL          REGISTER SET SELECTION ROUTINES
13685
13686                                   ;
13687                                   ;IF PROCESSOR UNDER TEST HAS 2 REGISTER SETS
13688                                   ;SELECT REGISTER SET TO BE USED BASED ON LEAST SIGNIFICANT BIT OF
13689                                   ;TEST # (TOTTC), AND LOAD REGISTER SET WHICH WAS NOT
13690                                   ;SELECTED WITH A FIXED PATTERN <NOTREG>.
13691                                   ;
13692
13693  055252                           SELREG:
13694  055252  005737  002064                   TST TWOSET              ;DOES MACHINE UNDER TEST HAVE 2 REG SETS?
13695  055256  001506                   BEQ 1$                  ;BRANCH IF NO
13696  055260  032737  000001  001420   BIT #1,TOTTC            ;PROCESSOR IS AN 11/74 - HAS 2 REG SETS;USE
13697                                                           ;  LEAST SIGNIF. BIT OF TEST COUNT TO LOAD
13698                                                           ;  PSW BIT 11 (REG SET BIT).
13699  055266  001041                   BNE 2$                  ;BRANCH TO USE REGISTER SET 1.
13700  055270  052777  004000  124366   BIS #4000,@TPSW         ;CIS INST WILL BE TESTED USING GPR SET 0.
13701  055276  042737  001000  002136   BIC #1000,FATAL         ;INDICATE GPR SET 0 IN FATAL ERROR WORD
13702                                                           ;LOAD SET 1 WITH PATTERN IN NOTREG.
13703  055304  013700  001702           MOV NOTREG,R0
13704  055310  013701  001702           MOV NOTREG,R1
13705  055314  013702  001702           MOV NOTREG,R2
13706  055320  013703  001702           MOV NOTREG,R3
13707  055324  013704  001702           MOV NOTREG,R4
13708  055330  013705  001702           MOV NOTREG,R5
13709  055334  042777  004000  124322   BIC #4000,@TPSW         ;SET REGISTER SET TO 0
13710  055342  042777  004000  125152   BIC #4000,@PCLK1P       ;ASSURE CORRECT REGISTER USAGE ON INTERRUPT
13711  055350  042777  004000  125452   BIC #4000,@LTCIP
13712  055356  042737  004000  000006   BIC #4000,@#6
13713  055364  005037  002056           CLR REGSET              ;SET REG SET INDICATOR TO 0
13714  055370  000441                   BR 1$                   ;BRANCH TO RETURN
13715  055372  042777  004000  124264  2$:      BIC #4000,@TPSW         ;CIS INST WILL BE TESTED USING GPR SET 1.
13716  055400  052737  001000  002136           BIS #1000,FATAL         ;INDICATE GPR SET 1 IN FATAL ERROR WORD
13717                                                           ;LOAD SET 0 WITH PATTERN IN NOTREG.
13718  055406  013700  001702           MOV NOTREG,R0
13719  055412  013701  001702           MOV NOTREG,R1
13720  055416  013702  001702           MOV NOTREG,R2
13721  055422  013703  001702           MOV NOTREG,R3
13722  055426  013704  001702           MOV NOTREG,R4
13723  055432  013705  001702           MOV NOTREG,R5
13724  055436  052777  004000  124220   BIS #4000,@TPSW         ;SET REGISTER SET TO 1
13725  055444  052777  004000  125050   BIS #4000,@PCLK1P       ;ASSURE CORRECT REGISTER USAGE ON INTERRUPT
13726  055452  052777  004000  125350   BIS #4000,@LTCIP
13727  055460  052737  004000  000006   BIS #4000,@#6
13728  055466  012737  000001  002056   MOV #1,REGSET           ;SET REG SET INDICATOR TO 1
13729  055474  000207                   1$:      RTS PC
13730
13731                                   ;
13732                                   ;ROUTINE TO VERIFY THAT REGISTER SET WHICH WAS NOT SELECTED
13733                                   ;(PROVIDED PROCESSOR UNDER TEST HAS 2) DID NOT GET CHANGED, AND
13734                                   ;SWITCH TO REGISTER SET 0.
13735                                   ;
13736
13737  055476                           CKUREG:
```

```
13738  055476  005737  002064                    TST TWOSET              ;PROCESSOR UNDER TEST HAVE TWO REGISTER SETS?
13739  055502  001435                            BEQ 1$                  ;BRANCH IF NO
13740  055504  005737  002056                    TST REGSET              ;DETERMINE WHICH REG SET WAS IN USE
13741  055510  001426                            BEQ 2$                  ;BRANCH IF REG SET 0 WAS USED
13742  055512  042777  004000  124144            BIC #4000,@TPSW         ;VERIFY CONTENTS OF REG SET 0
13743  055520  020037  001702          3$:       CMP R0,NOTREG
13744  055524  001030                            BNE 4$
13745  055526  020137  001702                    CMP R1,NOTREG
13746  055532  001025                            BNE 4$
13747  055534  020237  001702                    CMP R2,NOTREG
13748  055540  001022                            BNE 4$
13749  055542  020337  001702                    CMP R3,NOTREG
13750  055546  001017                            BNE 4$
13751  055550  020437  001702                    CMP R4,NOTREG
13752  055554  001014                            BNE 4$
13753  055556  020537  001702                    CMP R5,NOTREG
13754  055562  001011                            BNE 4$
13755  055564  000404                            BR 1$
13756  055566  052777  004000  124070  2$:       BIS #4000,@TPSW         ;VERIFY CONTENTS OF REG SET 1
13757  055574  000751                            BR 3$
13758  055576  042777  004000  124060  1$:       BIC #4000,@TPSW         ;SET REG SET TO ZERO
13759  055604  000207                            RTS PC                  ;RETURN
13760  055606                          4$:       PRINTB #HLTMSG
  (6)  055606  012746  012173                    MOV     #HLTMSG,-(SP)
  (3)  055612  010600                            MOV     SP,R0
  (4)  055614  004737  066232                    JSR PC,FPRINT
13761  055620  012737  055710  002174            MOV #100$,HLTLOC
13762  055626  004737  055714                    JSR PC,IDINFO           ;IDENTIFY FAILING INST
13763  055632                                    PRINTB #FORM38,REGSET
  (7)  055632  013746  002056                    MOV     REGSET,-(SP)
  (6)  055636  012746  014501                    MOV     #FORM38,-(SP)
  (3)  055642  010600                            MOV     SP,R0
  (4)  055644  004737  066232                    JSR PC,FPRINT
13764  055650                                    PRINTB #FORM39,NOTREG,R0,R1,R2,R3,R4,R5
 (13)  055650  010546                            MOV     R5,-(SP)
 (12)  055652  010446                            MOV     R4,-(SP)
 (11)  055654  010346                            MOV     R3,-(SP)
 (10)  055656  010246                            MOV     R2,-(SP)
  (9)  055660  010146                            MOV     R1,-(SP)
  (8)  055662  010046                            MOV     R0,-(SP)
  (7)  055664  013746  001702                    MOV     NOTREG,-(SP)
  (6)  055670  012746  014560                    MOV     #FORM39,-(SP)
  (3)  055674  010600                            MOV     SP,R0
  (4)  055676  004737  066232                    JSR PC,FPRINT
13765  055702  012737  000001  001114            MOV #1,$MSGTY           ;TELL APT THERE IS A FATAL ERROR        ;;REV-C
13766  055710  000000                  100$:     HALT                    ;REGISTER SET ERROR;PRESS CONTINUE SWITCH TO CONTINUE
13767                                             ;  TESTING
13768  055712  000731                            BR 1$
13769
13770  055714                          IDINFO:   PRINTB #TRPINF,HLTLOC,MODE,DEN,TINST,TOTTCH,TOTTC
 (12)  055714  013746  001420                    MOV     TOTTC,-(SP)
 (11)  055720  013746  001416                    MOV     TOTTCH,-(SP)
 (10)  055724  013746  050164                    MOV     TINST,-(SP)
  (9)  055730  013746  002166                    MOV     DEN,-(SP)
```

```
   (8)  055734  013746  002164                  MOV     MODE,-(SP)
   (7)  055740  013746  002174                  MOV     HLTLOC,-(SP)
   (6)  055744  012746  012310                  MOV     #TRPINF,-(SP)
   (3)  055750  010600                          MOV     SP,R0
   (4)  055752  004737  066232                  JSR PC,FPRINT
13771   055756  000207                          RTS PC
13772
```

```
13774                                   .SBTTL          MEMORY MANAGEMENT SUBROUTINES
13775                                   ;
13776                                   ;MEMORY MANAGEMENT SUBROUTINES
13777                                   ;
13778                                   ;
13779                                   ;
13780                                   ;
13781                                   ;
13782  055760                           ;SETUP PAR'S
13783  055760  005737  002162          SETPAR:
13784  055764  001002                          TST MMFLG               ;SETUP PAR'S FOR USER,SUPV, AND KERNEL I & D SPACES
13785  055766  000137  056444                  BNE 2$                  ;DOES SYSTEM UNDER TEST HAVE MEMORY MANAGEMENT?
13786  055772  005737  002160                  JMP 1$                  ;BRANCH IF YES
13787                           2$:     TST PT34                        ;IS THIS AN 11/34 TYPE PROCESSOR
13788  055776  001142                                                  ;   (I.E. K, U MODES AND 18 BIT MEM MGMT)
13789  056000  005037  172516                  BNE 3$                  ;BRANCH IF YES
13790  056004  012737  000000  177660          CLR @#MMR3              ;CLEAR OUT D-SPACE ENABLES
13791  056012  012737  000200  177662          MOV #0,@#UDPAR0         ;SETUP USER D PAR'S
13792  056020  012737  000400  177664          MOV #200,@#UDPAR1
13793  056026  012737  000600  177666          MOV #400,@#UDPAR2
13794  056034  012737  001000  177670          MOV #600,@#UDPAR3
13795  056042  012737  001200  177672          MOV #1000,@#UDPAR4
13796  056050  012737  001400  177674          MOV #1200,@#UDPAR5
13797  056056  012737  177600  177676          MOV #1400,@#UDPAR6
13798                                          MOV #177600,@#UDPAR7
13799  056064  012737  000000  172240          MOV #0,@#SIPAR0         ;SETUP SUPERVISOR I PAR'S
13800  056072  012737  000200  172242          MOV #200,@#SIPAR1
13801  056100  012737  000400  172244          MOV #400,@#SIPAR2
13802  056106  012737  000600  172246          MOV #600,@#SIPAR3
13803  056114  012737  001000  172250          MOV #1000,@#SIPAR4
13804  056122  012737  001200  172252          MOV #1200,@#SIPAR5
13805  056130  012737  001400  172254          MOV #1400,@#SIPAR6
13806  056136  012737  177600  172256          MOV #177600,@#SIPAR7
13807
13808  056144  012737  000000  172260          MOV #0,@#SDPAR0         ;SETUP SUPERVISOR D PAR'S
13809  056152  012737  000200  172262          MOV #200,@#SDPAR1
13810  056160  012737  000400  172264          MOV #400,@#SDPAR2
13811  056166  012737  000600  172266          MOV #600,@#SDPAR3
13812  056174  012737  001000  172270          MOV #1000,@#SDPAR4
13813  056202  012737  001200  172272          MOV #1200,@#SDPAR5
13814  056210  012737  001400  172274          MOV #1400,@#SDPAR6
13815  056216  012737  177600  172276          MOV #177600,@#SDPAR7
13816
13817  056224  012737  000000  172360          MOV #0,@#KDPAR0         ;SETUP KERNEL D PAR'S
13818  056232  012737  000200  172362          MOV #200,@#KDPAR1
13819  056240  012737  000400  172364          MOV #400,@#KDPAR2
13820  056246  012737  000600  172366          MOV #600,@#KDPAR3
13821  056254  012737  001000  172370          MOV #1000,@#KDPAR4
13822  056262  012737  001200  172372          MOV #1200,@#KDPAR5
13823  056270  012737  001400  172374          MOV #1400,@#KDPAR6
13824  056276  012737  177600  172376          MOV #177600,@#KDPAR7
13825
13826  056304  012737  000000  177640  3$:     MOV #0,@#UIPAR0         ;SETUP USER I PAGE ADDRESS REGISTERS
13827  056312  012737  000200  177642          MOV #200,@#UIPAR1
```

```
13828  056320  012737  000400  177644          MOV #400,@#UIPAR2
13829  056326  012737  000600  177646          MOV #600,@#UIPAR3
13830  056334  012737  001000  177650          MOV #1000,@#UIPAR4
13831  056342  012737  001200  177652          MOV #1200,@#UIPAR5
13832  056350  012737  001400  177654          MOV #1400,@#UIPAR6
13833  056356  012737  177600  177656          MOV #177600,@#UIPAR7
13834
13835  056364  012737  000000  172340          MOV #0,@#KIPAR0         ;SETUP KERNEL I PAR'S
13836  056372  012737  000200  172342          MOV #200,@#KIPAR1
13837  056400  012737  000400  172344          MOV #400,@#KIPAR2
13838  056406  012737  000600  172346          MOV #600,@#KIPAR3
13839  056414  012737  001000  172350          MOV #1000,@#KIPAR4
13840  056422  012737  001200  172352          MOV #1200,@#KIPAR5
13841  056430  012737  001400  172354          MOV #1400,@#KIPAR6
13842  056436  012737  177600  172356          MOV #177600,@#KIPAR7
13843
13844  056444  000207                  1$:     RTS PC
13845
13846                                  ;
13847                                  ;SELECT MODE AND D-SPACE ENABLE/DISABLE
13848                                  ;
13849                                  ;BOTH MODE AND D-SPACE ENABLE ARE SELECTED RANDOMLY FOR EACH TEST
13850                                  ;IF EXECUTING IN RANDOM MODE OR IN A NORMAL FIELD SERVICE TYPE RUN.
13851                                  ;IF IN A DESIGN VERIFCATION TYPE RUN (ST @ 204) AND NOT RANDOM MODE
13852                                  ;THEN THESE VARIABLES WERE SET VIA OPERATOR DIAGLOG ABOVE.
13853                                  ;REGARDLESS OF THE RUN TYPE, IF MEMORY MANAGEMENT IS AVAILABLE
13854                                  ;(MMFLG=NONZERO) THEN MMR3 IS LOADED TO PROPER D-SPACE STATE.
13855                                  ;
13856  056446                          SELMD:
13857  056446  005737  002100                  TST FSRUN               ;NORMAL FFIELD SERVICE TYPE RUN?
13858  056452  001003                          BNE 10$                 ;BRANCH IF YES
13859  056454  005737  001764                  TST RANDOM              ;RANDOM TESTING?
13860  056460  001443                          BEQ 11$                 ;BRANCH IF NO
13861  056462  022737  000001  002170  10$:     CMP #1,NMODES           ;DOES SYSTEM UNDER TEST HAVE MORE THAN  ONE
13862                                          ;  PROCESSOR MODE?
13863  056470  001003                          BNE 2$                  ;BRANCH IF YES
13864  056472  005037  002164                  CLR MODE
13865  056476  000422                          BR 4$
13866  056500  004737  064334          2$:     JSR PC,RN               ;GENERATE A RANDOM #
13867  056504  042700  177774                  BIC #177774,R0          ;USE BITS 1 & 0 TO SELECT MODE
13868                                          ; (I.E 00=KERNEL,01=SUPV,11=USER)
13869  056510  022700  000002                  CMP #2,R0               ;ILLEGAL MODE (10)?
13870  056514  001771                          BEQ 2$                  ;YES - TRY AGAIN
13871  056516  022737  000002  002170          CMP #2,NMODES           ;DOES SYSTEM UNDER TEST HAVE ONLY 2 PROC MODES?
13872  056524  001005                          BNE 6$                  ;BRANCH IF NO
13873  056526  022700  000001                  CMP #1,R0               ;ON 2 MODE MACHINE MODES ASSUMED TO BE
13874                                          ;  KERNEL & USER
13875  056532  001002                          BNE 6$                  ;BRANCH IF MODE IS LEGAL
13876  056534  052700  000002                  BIS #2,R0               ;IF RANDOM MODE = SUPV THEN SWITCH IT TO USER
13877  056540  010037  002164          6$:     MOV R0,MODE             ;MODE VALID - SET INTO MODE WORD
13878  056544  005037  002166          4$:     CLR DEN
13879  056550  004737  064334                  JSR PC,RN               ;GENERATE A RANDOM #
13880  056554  032700  000001                  BIT #1,R0               ;USE BIT 0 OF RANDOM NUMBER TO SELECT D ENABLE
13881  056560  001403                          BEQ 11$                 ;BRANCH TO DISABLE D SPACE
```

```
13882  056562  012737  177777  002166          MOV #177777,DEN         ;SET D ENABLE FLAG
13883  056570  005737  002162          11$:     TST MMFLG               ;MEMORY MGMT AVAILABLE?
13884  056574  001435                          BEQ 1$                  ;NO - EXIT
13885  056576  005737  002160                  TST PT34                ;11/34 TYPE MEM MGMT?
13886  056602  001403                          BEQ 7$                  ;BRANCH IF NO
13887  056604  005037  002166                  CLR DEN
13888  056610  000427                          BR 1$
13889  056612  005037  172516          7$:     CLR @#MMR3              ;DISABLE ALL D-SPACES
13890  056616  005737  002166                  TST DEN                 ;ENABLE D SPACE IN MMR3?
13891  056622  001422                          BEQ 1$                  ;BRANCH IF NO
13892  056624  005737  002164          13$:    TST MODE                ;MODE SELECTED = KERNEL?
13893  056630  001004                          BNE 3$                  ;BRANCH IF NO
13894  056632  052737  000004  172516          BIS #4,@#MMR3           ;ENABLE KERNEL D SPACE
13895  056640  000413                          BR 1$
13896  056642  022737  000003  002164  3$:     CMP #3,MODE             ;MODE SELECTED = USER
13897  056650  001004                          BNE 5$                  ;BRANCH IF NO
13898  056652  052737  000001  172516          BIS #1,@#MMR3           ;ENABLE USER D SPACE
13899  056660  000403                          BR 1$                   ;MODE SLECTED = SUPERVISOR
13900  056662  052737  000002  172516  5$:     BIS #2,@#MMR3           ;ENABLE SUPERVISOR D SPACE
13901  056670  000207                  1$:     RTS PC
13902
13903                                  ;
13904                                  ;SETUP PDR'S
13905                                  ;
13906  056672                          SETPDR:
13907  056672  005737  002160                  TST PT34                ;11/34 TYPE MEM MGMT?
13908  056676  001022                          BNE 8$                  ;BRANCH IF YES
13909                                                                  ;FIRST CLEAR ALL PDR'S (ABORT ALL ACCESSES)
13910
13911  056700  012700  172200                  MOV #SIPDR0,R0
13912  056704  005020          2$:     CLR (R0)+               ;CLEAR SUPERVISOR PDR'S
13913  056706  020027  172236                  CMP R0,#SDPDR7
13914  056712  101774                          BLOS 2$
13915
13916  056714  012700  177620                  MOV #UDPDR0,R0          ;CLEAR USER D-PDR'S
13917  056720  005020          1$:     CLR (R0)+
13918  056722  020027  177636                  CMP R0,#UDPDR7
13919  056726  101774                          BLOS 1$
13920
13921  056730  012700  172320                  MOV #KDPDR0,R0          ;CLEAR KERNEL D-PDR'S
13922  056734  005020          99$:    CLR (R0)+
13923  056736  020027  172336                  CMP R0,#KDPDR7
13924  056742  101774                          BLOS 99$
13925
13926  056744  012700  177600          8$:     MOV #UIPDR0,R0          ;CLEAR USER I-PDR'S
13927  056750  005020          9$:     CLR (R0)+
13928  056752  020027  177616                  CMP R0,#UIPDR7
13929  056756  101774                          BLOS 9$
13930
13931  056760  012700  172300                  MOV #KIPDR0,R0
13932  056764  005020          3$:     CLR (R0)+               ;CLEAR KERNEL PDR'S
13933  056766  020027  172316                  CMP R0,#KIPDR7
13934  056772  101774                          BLOS 3$
13935
```

```
13936                                                   ;SETUP KERNEL MODE PDR'S
13937
13938  056774  012737  077406  172316          MOV #77406,@#KIPDR7     ;ALLOW R/W ACCESS OF I/O PAGE
13940  057002  012737  077402  172310          MOV #77402,@#KIPDR4     ;  AND R ONLY ACCESS OF PHYSICAL ADDRESS
13941  057010  012737  077402  172306          MOV #77402,@#KIPDR3     ;  20 TO 120K
13943  057016  012737  077402  172304          MOV #77402,@#KIPDR2
13944  057024  012737  077402  172302          MOV #77402,@#KIPDR1
13945  057032  005737  002164                  TST MODE                ;IS MODE = KERNEL?
13946  057036  001404                          BEQ 31$                 ;BRANCH IF YES
13947  057040  012737  077406  172300          MOV #77406,@#KIPDR0
13948  057046  000403                          BR 32$
13949  057050  012737  077402  172300  31$:    MOV #77402,@#KIPDR0
13950  057056  005737  002164          32$:    TST MODE                ;IF MODE= KERNEL & D-SPACE IS DISABLED
13951  057062  001021                          BNE 5$                  ;  THEN ALLOW R/W OF STACK & TEST BUFFER AREA
13952  057064  005737  002166                  TST DEN
13953  057070  001004                          BNE 4$
13955  057072  012737  077406  172312          MOV #77406,@#KIPDR5
13960  057100  000455                          BR 11$
13961  057102  012737  077406  172336  4$:     MOV #77406,@#KDPDR7     ;IF MODE IS KERNEL & D-SPACE IS ENABLED
13963  057110  012737  077406  172332          MOV #77406,@#KDPDR5     ;  THEN SETUP KERNEL D-SPACE PDRS
13968  057116  012737  077402  172320          MOV #77402,@#KDPDR0     ;ALLOW R/W ACCESS OF I/O PAGE AND TEST BUFFER
13969                                           ;  AREA; R-ONLY ACCESS OF PHYS 0-20K
13973  057124  000443                          BR 11$
13974  057126  022737  000001  002164  5$:     CMP #1,MODE             ;SETUP SUPERVISOR MODE PDR'S
13975  057134  001016                          BNE 7$                  ;BRANCH IF TEST MODE IS NOT SUPERVISOR
13976  057136  012737  077402  172204          MOV #77402,@#SIPDR2     ;ALLOW R ONLY ACCESS OF SPACE INCLUDING
13977                                           ; CIS INST TO BE EXECUTED
13981  057144  005737  002166                  TST DEN                 ;IF D-SPACE IS NOT ENABLED ALLOW
13982  057150  001004                          BNE 6$                  ;  R/W ACCESS OF TEST BUFFER AREA IN SUPERVISOR
13983                                           ;  I-SPACE
13985  057152  012737  077406  172212          MOV #77406,@#SIPDR5
13990  057160  000425                          BR 11$
13992  057162  012737  077406  172232  6$:     MOV #77406,@#SDPDR5     ;D-SPACE IS ENABLED; ALLOW R/W ACCESS
13997  057170  000421                          BR 11$                  ;  TO TEST BUFFER AREA IN SUPERVISOR D-SPACE
13998  057172  022737  000003  002164  7$:     CMP #3,MODE             ;SETUP USER MODE PDR'S
13999  057200  001015                          BNE 11$                 ;BRANCH IF TEST MODE IS NOT USER
14000  057202  012737  077402  177604          MOV #77402,@#UIPDR2     ;ALLOW R ONLY ACCESS OF SPACE INCLUDING
14001                                           ;  CIS INST TO BE EXECUTED
14005  057210  005737  002166                  TST DEN                 ;IF D-SPACE IS NOT ENABLED ALLOW R/W
14006  057214  001004                          BNE 10$                 ;  ACCESS OF TEST BUFFER AREA IN USER
14008  057216  012737  077406  177612          MOV #77406,@#UIPDR5     ;  I SPACE
14013  057224  000403                          BR 11$
14015  057226  012737  077406  177632  10$:    MOV #77406,@#UDPDR5     ;D-SPACE IS ENABLED; ALLOW R/W ACCESS
14020                                           ;  TO TEST BUFFER AREA IN USER D-SPACE
14021  057234  005737  001764          11$:    TST RANDOM              ;ASSURE THAT XLATION BUFFER (MOVTC) IS IN READABLE SPACE
14022                                           ;IN RANDOM MODE?
14023  057240  001454                          BEQ 12$                 ;BRANCH IF NO
14024  057242  022737  076032  050164          CMP #76032,TINST        ;IS INST UNDER TEST = MOVTC?
14025  057250  001404                          BEQ 20$                 ;BRANCH IF YES
14026  057252  022737  076132  050164          CMP #76132,TINST
14027  057260  001044                          BNE 12$
14028  057262  005737  002166          20$:    TST DEN                 ;IS D-SPACE ENABLED?
14029  057266  001017                          BNE 13$                 ;BRANCH IF YES
14030  057270  005737  002164                  TST MODE                ;IS MODE = KERNEL?
```

```
14031  057274  001436                          BEQ 12$                 ;BRANCH IF YES - NO PDR CHANGE REQUIRED FOR XLATION BUFF
14032  057276  022737  000001  002164          CMP #1,MODE             ;IS MODE = SUPERVISOR?
14033  057304  001004                          BNE 14$                 ;BRANCH IF NO
14034  057306  012737  077402  172202          MOV #77402,@#SIPDR1     ;ALLOW R-ONLY ACCESS TO XLATION BUFFER
14035  057314  000426                          BR 12$
14036  057316  012737  077402  177602  14$:    MOV #77402,@#UIPDR1     ;USER MODE- ALLOW R-ONLY ACCESS TO XLATION BUFFER
14037  057324  000422                          BR 12$
14038  057326  005737  002164          13$:    TST MODE
14039  057332  001004                          BNE 15$
14040  057334  012737  077402  172322          MOV #77402,@#KDPDR1             ;KERNEL MODE,D-EN - ALLOW R-ONLY ACCESS TO XLATI
14041  057342  000413                          BR 12$
14042  057344  022737  000001  002164  15$:    CMP #1,MODE
14043  057352  001004                          BNE 16$
14044  057354  012737  077402  172222          MOV #77402,@#SDPDR1             ;SUPERVISOR MODE,D-EN - ALLOW READ OF XLATION BU
14045  057362  000403                          BR 12$
14046  057364  012737  077402  177622  16$:    MOV #77402,@#UDPDR1             ;USER MODE,D-EN - ALLOW R-ONLY ACCESS OF XLATION
14047  057372  000207                  12$:    RTS PC
14048
14049
14050
14052                                  ;
14053                                  ;NOTE LOCATIONS 57670-60070 ARE RESERVED FOR STACK USAGE
14054                                  ;       DURING EXECUTION OF CIS STACK PROBEAHEAD MEMORY MGMT
14055                                  ;       ABORT TESTS.
14056                                  ;
14057
14058
14059
14060
14061          060100                          .=60100
14062
14063
14065                                  ;
14066                                  ;HALT SERVICE ROUTINE  (USED FOR TRAPS CAUSED BY HALTS IN SUPERVISOR OR USER MODE
14067                                  ;
14068  060100  005037  177572          HLTSER: CLR @#MMR0              ;TURN OFF MEM MGMT - OVERWRITTEN WITH NOPS
14069                                          ; IF NO MEM MGMT ON SYSTEM (REF SIZEPT ROUTINE)
14070  060104  021627  050204                  CMP (SP),#TINRET+2      ;WAS HALT AT CIS INST RETURN LOC?
14071  060110  001437                          BEQ 1$                  ;BRANCH IF YES
14072  060112  011637  002172                  MOV (SP),TRPLOC         ;GET TRAP LOCATION
14073  060116  162737  000002  002172          SUB #2,TRPLOC
14074  060124                                  PRINTB #TRAP4           ;PRINT - TRAP TO LOC 4
  (6)  060124  012746  012136                  MOV     #TRAP4,-(SP)
  (3)  060130  010600                          MOV     SP,R0
  (4)  060132  004737  066232                  JSR PC,FPRINT
14075  060136                                  PRINTB #TRPINF,TRPLOC,MODE,DEN,TINST,TOTTCH,TOTTC       ;PRINT - ADDITIONAL TRAP
 (12)  060136  013746  001420                  MOV     TOTTC,-(SP)                                     ;
 (11)  060142  013746  001416                  MOV     TOTTCH,-(SP)
 (10)  060146  013746  050164                  MOV     TINST,-(SP)
  (9)  060152  013746  002166                  MOV     DEN,-(SP)
  (8)  060156  013746  002164                  MOV     MODE,-(SP)
  (7)  060162  013746  002172                  MOV     TRPLOC,-(SP)
  (6)  060166  012746  012310                  MOV     #TRPINF,-(SP)
  (3)  060172  010600                          MOV     SP,R0
```

```
  (4)  060174  004737  066232                    JSR PC,FPRINT
14076  060200  012737  000001  001114            MOV #1,$MSGTY          ;TELL APT THERE IS A FATAL ERROR        ;;REV-C
14077  060206  000000                            HALT
14078  060210  016637  000002  003672  1$:       MOV 2(SP),TCCR         ;SAVE CIS INST RETURN CONDITION CODES
14079  060216  005726                            TST (SP)+
14080  060220  005726                            TST (SP)+
14081  060222  000137  050226                    JMP SUHRET
14082
14083
14084                                  ;
14085                                  ;ILLEGAL INSTRUCTION TRAP SERVICE ROUTINE
14086                                  ;
14087  060226  005037  177572          ILLSER: CLR @#MMR0             ;TURN OFF MEM MGMT - OVERWRITTEN WITH NOPS
14088                                                                  ; IF NO MEM MGMT ON SYSTEM (REF SIZEPT ROUTINE)
14089  060232  005737  002160                    TST PT34               ;11/34 TYPE PROCESSOR?
14090  060236  001403                            BEQ 2$                 ;BRANCH IF NO
14091                                                                  ;NOTE:ON 11/34 HALT IN USER MODE TRAPS TO 10 (NOT 4)
14092  060240  021627  050204                    CMP (SP),#TINRET+2     ;WAS HALT AT CIS INST RETURN LOC?
14093  060244  001460                            BEQ 3$                 ;BRANCH IF YES
14094  060246  022737  000001  001420  2$:       CMP #1,TOTTC           ;WAS ILLEGAL INST TRAP DURING TEST #1 ?
14095  060254  001014                            BNE 1$                 ;BRANCH IF NO
14096  060256  021627  050166                    CMP (SP),#TINST+2      ;WAS ILLEGAL INST THE CIS INST?
14097  060262  001011                            BNE 1$                 ;BRANCH IF NO
14098  060264                                    PRINTB #CISQ           ;PRINT CISP PRESENT? WARNING
  (6)  060264  012746  012013                    MOV     #CISQ,-(SP)
  (3)  060270  010600                            MOV     SP,R0
  (4)  060272  004737  066232                    JSR PC,FPRINT
14099  060276  012737  000001  001114            MOV #1,$MSGTY          ;TELL APT THERE IS A FATAL ERROR        ;;REV-C
14100  060304  000000                            HALT
14101  060306  011637  002172          1$:       MOV (SP),TRPLOC        ;GET LOCATION THAT CAUSED TRAP
14102  060312  162737  000002  002172            SUB #2,TRPLOC
14103  060320                                    PRINTB #TRAP10         ;PRINT TRAP TO 10
  (6)  060320  012746  012154                    MOV     #TRAP10,-(SP)
  (3)  060324  010600                            MOV     SP,R0
  (4)  060326  004737  066232                    JSR PC,FPRINT
14104  060332                                    PRINTB #TRPINF,TRPLOC,MODE,DEN,TINST,TOTTCH,TOTTC      ;PRINT ADDITIONAL TRAP I
 (12)  060332  013746  001420                    MOV     TOTTC,-(SP)
 (11)  060336  013746  001416                    MOV     TOTTCH,-(SP)
 (10)  060342  013746  050164                    MOV     TINST,-(SP)
  (9)  060346  013746  002166                    MOV     DEN,-(SP)
  (8)  060352  013746  002164                    MOV     MODE,-(SP)
  (7)  060356  013746  002172                    MOV     TRPLOC,-(SP)
  (6)  060362  012746  012310                    MOV     #TRPINF,-(SP)
  (3)  060366  010600                            MOV     SP,R0
  (4)  060370  004737  066232                    JSR PC,FPRINT
14105  060374  012737  000001  001114            MOV #1,$MSGTY          ;TELL APT THERE IS A FATAL ERROR        ;;REV-C
14106  060402  000000                            HALT
14107  060404  000002                            RTI
14108  060406  016637  000002  003672  3$:       MOV 2(SP),TCCR         ;SAVE CIS INST RETURN CONDITON CODES
14109  060414  005726                            TST (SP)+
14110  060416  005726                            TST (SP)+
14111  060420  000137  050226                    JMP SUHRET
14112
14113
```

```
14114                                   ;
14115                                   ;MEMORY MANAGEMENT VIOLATION TRAP SERVICE ROUTINE
14116                                   ;
14117  060424  005037  177572          MMVIOL: CLR @#MMR0              ;TURN OFF MEM MGMT
14118  060430  011637  002172                  MOV (SP),TRPLOC          ;GET LOCATION WHICH CAUSED TRAP
14119  060434  162737  000002  002172          SUB #2,TRPLOC
14120  060442                                  PRINTB #MMVMSG           ;PRINT MEMORY MANAGEMENT VIOL
  (6)  060442  012746  012116                  MOV     #MMVMSG,-(SP)
  (3)  060446  010600                          MOV     SP,R0
  (4)  060450  004737  066232                  JSR PC,FPRINT
14121  060454                                  PRINTB #TRPINF,TRPLOC,MODE,DEN,TINST,TOTTCH,TOTTC
 (12)  060454  013746  001420                  MOV     TOTTC,-(SP)
 (11)  060460  013746  001416                  MOV     TOTTCH,-(SP)
 (10)  060464  013746  050164                  MOV     TINST,-(SP)
  (9)  060470  013746  002166                  MOV     DEN,-(SP)
  (8)  060474  013746  002164                  MOV     MODE,-(SP)
  (7)  060500  013746  002172                  MOV     TRPLOC,-(SP)
  (6)  060504  012746  012310                  MOV     #TRPINF,-(SP)
  (3)  060510  010600                          MOV     SP,R0
  (4)  060512  004737  066232                  JSR PC,FPRINT
14122  060516  012737  000001  001114          MOV #1,$MSGTY            ;TELL APT THERE IS A FATAL ERROR        ;;REV-C
14123  060524  000000                          HALT
14124  060526  000002                          RTI
14125
14126
14127                                   ;
14128                                   ;ACCEPT ASCII (K,S, OR U) FROM TTY AND SETUP MODE WORD
14129  060530                           ;
14130  060530  105777  121132          KSORU:
14131  060534  100375          1$:     TSTB @TKS                ;WAIT FOR A CHARACTER
14132  060536  117737  121150  065600          BPL 1$
14133  060544  042737  177600  065600          MOVB @TKB,RCHAR          ;READ & SAVE CHAR
14134  060552  022737  000021  065600          BIC #^C177,RCHAR         ;GET RID OF JUNK IF ANY
14135  060560  001763                          CMP #021,RCHAR           ;SEE IF A RANDOM ^Q WAS INPUTED         ;;REV-C
14136  060562  004737  065562                  BEQ 1$                   ;BRANCH IF SO - INPUT NOT WANTED        ;;REV-C
14137  060566  123727  065600  000113          JSR PC,ECHAR             ;ECHO CHARACTER
14138  060574  001411                          CMPB RCHAR,#113          ;IS CHAR A 'K'
14139  060576  123727  065600  000123          BEQ 6$                   ;BRANCH IF YES
14140  060604  001410                          CMPB RCHAR,#123          ;IS CHAR AN 'S'
14141  060606  123727  065600  000125          BEQ 3$                   ;BRANCH IF YES
14142  060614  001410                          CMPB RCHAR,#125          ;IS CHAR A 'U' ?
14143  060616  000414                          BEQ 4$                   ;BRANCH IF YES
14144  060620  005037  002164          6$:     BR 5$                    ;CHAR IS ILLEGAL :RETURN TO CALL +2
14145  060624  000407                          CLR MODE                 ;SET MODE TO KERNEL (0)
14146  060626  012737  000001  002164  3$:     BR 2$
14147  060634  000403                          MOV #1,MODE              ;SET MODE WORD TO SUPERVISOR (1)
14148  060636  012737  000003  002164  4$:     BR 2$
14149  060644  062716  000002          2$:     MOV #3,MODE              ;SET MODE WORD TO USER (3)
14150  060650  000207                  5$:     ADD #2,(SP)
14151                                          RTS PC
14152
```

```
14155                                   .SBTTL          PROGRAMMABLE CLOCK SERVICE ROUTINE
14156                                   ;
14157                                   ; KW11-P (PROGRAMMABLE CLOCK) INTERRUPT SERVICE ROUTINES (ALWAYS ENTERED IN KERNEL MODE)
14158                                   ;
14159  060652                         PCIS3:                          ;P CLK SERVICE ROUTINE USED FOR INTR DURING
14160                                                                  ;  EXECUTION OF 'STATE DISTURBING' DIVPI
14161                                                                  ;  INSTRUCTION BELOW.
14162  060652  042777  000001  121644         BIC #1,@PC1CSR          ;TURN OFF PCLK1
14163  060660  000002                 RTI
14164
14165  060662  005037  177572        PCIS2:  CLR @#MMR0              ;P CLK INTR SERVICE ROUTINE USED WHEN
14166                                                                  ;  TESTING LATENCY
14167                                                                  ;THIS CLR INSTRUCTION TURNS OFF MEMORY MANAGEMENT
14168                                                                  ; THE CLR IS OVERWRITTEN WITH NOPS IF NOT 11/44
14169                                                                  ;  (SEE SIZEPT ROUTINE).
14170  060666  017737  121646  002546         MOV @PC2CTR,LATCT       ;SAVE P-CLK2 COUNTER FOR LATENCY CALCULATION
14171  060674  042777  000001  121632         BIC #1,@PC2CSR          ;TURN OFF PCLK2
14172  060702  005077  121630                CLR @PC2CSB             ;CLEAR PCLK2 COUNTER
14173
14174  060706  005037  177572        PCIS1:  CLR @#MMR0              ;NORMAL P CLK INTERRUPT SERVICE ROUTINE
14175                                                                  ;THIS CLR TURNS OFF MEM MGMT.
14176                                                                  ;THIS CLR GETS OVERWRITTEN WITH NOPS IF NOT 11/44
14177  060712  042777  000001  121604         BIC #1,@PC1CSR          ;TURN OFF P-CLK1
14178  060720  004737  062024                JSR PC,SGPR06           ;SAVE GENERAL PURPOSE REGS 0-6
14179  060724  021627  050164                CMP (SP),#TINST         ;INTERRUPTED THE TEST INST???
14180  060730  001162                        BNE 1$                  ;BRANCH IF NO
14181  060732  032766  000400  000002         BIT #400,2(SP)          ;IS PSW BIT 8 SET?
14182  060740  001407                        BEQ 4$                  ;BRANCH IF NO
14183  060742  005237  002552                INC INTCT               ;UPDATE INTERRUPT COUNT
14184  060746  052737  040000  002136         BIS #40000,FATAL        ;SET INTERRUPT INDICATOR IN FATAL ERROR WORD
14185  060754  004737  061650                JSR PC,RECLAT           ;RECORD LATENCY
14186  060760  004737  062252         4$:    JSR PC,STATCG           ;HAS THE 'STATE' OF CIS INST CHANGED?
14187  060764  000507                        BR 5$                   ;NO RETURN
14188  060766  005237  002544                INC PROGCT              ;YES RETURN - UPDATE PROGRESS COUNT
14189  060772  032766  000400  000002         BIT #400,2(SP)          ;IS PSW  BIT 8 SET?
14190  061000  001030                        BNE 6$                  ;BRANCH IF YES
14191  061002                                 PRINTB  #HLTMSG
   (6) 061002  012746  012173                MOV     #HLTMSG,-(SP)
   (3) 061006  010600                        MOV     SP,R0
   (4) 061010  004737  066232                JSR PC,FPRINT
14192  061014  012737  061060  002174         MOV #100$,HLTLOC
14193  061022  004737  055714                JSR PC,IDINFO           ;IDENTIFY FAILING INST
14194  061026                                 PRINTB #FORM42          ;MSG: CIS INST WAS SUSPENDED TO SERVICE INTR
   (6) 061026  012746  015031                MOV     #FORM42,-(SP)
   (3) 061032  010600                        MOV     SP,R0
   (4) 061034  004737  066232                JSR PC,FPRINT
14195  061040                                 PRINTB #FORM43          ;MSG: PSW BIT 8 SHOULD HAVE BEEN SET BUT WAS NOT
   (6) 061040  012746  015120                MOV     #FORM43,-(SP)
   (3) 061044  010600                        MOV     SP,R0
   (4) 061046  004737  066232                JSR PC,FPRINT
14196  061052  012737  000001  001114         MOV #1,$MSGTY           ;TELL APT THERE IS A FTAL ERROR          ;;REV-C
14197  061060  000000                100$:   HALT                    ;BIT 8 OF PSW SHOULD HAVE BEEN SET!!!
14198                                                                  ;PRESS CONTINUE TO PROCEED WITH TESTING
14199
```

```
14200  061062                                  6$:
14201  061062  012737  000001  002562                MOV #1,INTRVL           ;INST IS IN A NEW PART OF ITS OPERATION
14202  061070  004737  062134                        JSR PC,SAVST            ;SET P-CLK  INTERVAL  TO MINIMUM = 1
14203  061074  004737  061770              11$:      JSR PC,DIC              ;SAVE CIS INST STATE
14204  061100  076175                              DIVPI                   ;ALLOW INTERRUPT DURING THIS DIVPI IF REQUESTED
14205  061102  003156                              DIVDS                   ;DISTURB INTERNAL CISP STATE BY
14206  061104  003156                              DIVDS                   ;  EXECUTING A DIVP IN-LINE INST.
14207  061106  003162                              DIVDD
14208  061110  042777  000001  121406              BIC #1,@PC1CSR          ;TURN OFF PCLK1
14209  061116  013777  002042  121374              MOV SPCV,@PCLK1V        ;RESTORE PCLK VECTOR
14210  061124  013737  002044  120400              MOV TPRECS,PRECSK       ;RESTORE 65TH STACK WORD
14211  061132  004737  062102                      JSR PC,RGPR06           ;RESTORE GENERAL PURPOSE REGISTERS 0-6
14212  061136  013777  002562  121362              MOV INTRVL,@PC1CSB      ;SET INTERVAL
14213  061144  005737  002550                      TST LATEN               ;LATENCY TESTING?
14214  061150  001403                              BEQ 7$                  ;BRANCH IF NO
14215  061152  052777  000001  121354              BIS #1,@PC2CSR          ;TURN ON P-CLK2
14216  061160  005737  002162              7$:     TST MMFLG               ;TESTING WITH MEM MGMT ON?
14217  061164  001403                              BEQ 8$                  ;BRANCH IF NO
14218  061166  052737  000001  177572              BIS #1,@#MMR0           ;TURN ON MEM MGMT
14219  061174  052777  000001  121322  8$:         BIS #1,@PC1CSR          ;TURN ON P-CLK1
14220  061202  000002                      14$:    RTI                     ;RETURN FROM SERVICE
14221
14222  061204  005237  002562              5$:     INC INTRVL              ;INCREASE P-CLK1 INTERVAL
14223  061210  023737  002562  002566              CMP INTRVL,MAXIVL       ;IS INTERVAL GREATER THAN SOME PRESET
14224                                              ;  MAXIMUM ALLOWED?
14225  061216  103423                              BLO 12$                 ;BRANCH IF NO
14226  061220                                      PRINTB #HLTMSG
  (6)  061220  012746  012173                      MOV     #HLTMSG,-(SP)
  (3)  061224  010600                              MOV     SP,R0
  (4)  061226  004737  066232                      JSR PC,FPRINT
14227  061232  012737  061264  002174              MOV #101$,HLTLOC
14228  061240  004737  055714                      JSR PC,IDINFO           ;IDENTIFY FAILING INST
14229  061244                                      PRINTB #NOPROG
  (6)  061244  012746  012212                      MOV     #NOPROG,-(SP)
  (3)  061250  010600                              MOV     SP,R0
  (4)  061252  004737  066232                      JSR PC,FPRINT
14230  061256  012737  000001  001114              MOV #1,$MSGTY           ;TELL APT THERE IS A FATAL ERROR        ;;REV-C
14231  061264  000000                      101$:   HALT                    ;CIS INST DID NOT MAKE PROGRESS -
14232                                              ;  INTERVAL TILL INTERRUPT EXCEEDS USER
14233                                              ;  DEFINED MAXIMUM ALLOWED.
14234  061266  005737  002544              12$:    TST PROGCT              ;HAS PROGRESS BEEN MADE ON THIS INST PREVIOUSLY?
14235  061272  001450                              BEQ 13$                 ;BRANCH IF NO
14236  061274  000677                              BR 11$                  ;DISTURB INTERNAL STATE; THEN RETURN
14237                                              ;  FOR MORE PROGRESS
14238  061276  101057                      1$:     BHI 15$                 ;BRANCH IF INST ALREADY HAS COMPLETED (PC>TINST)
14239  061300  032766  000400  000002              BIT #400,2(SP)          ;DID NOT REACH INST YET.
14240                                              ;VERIFY THAT BIT 8 OF PSW IS NOT SET.
14241  061306  001440                              BEQ 17$                 ;BRANCH IF BIT 8 = 0.
14242  061310                                      PRINTB #HLTMSG
  (6)  061310  012746  012173                      MOV     #HLTMSG,-(SP)
  (3)  061314  010600                              MOV     SP,R0
  (4)  061316  004737  066232                      JSR PC,FPRINT
14243  061322  012737  000102  002174              MOV #102,HLTLOC
14244  061330  004737  055714                      JSR PC,IDINFO           ;IDENTIFY FAILING INST
```

```
14245  061334
  (6)  061334  012746  015201                    PRINTB #FORM44          ;MSG: BIT 8 OF PSW SET WITH PC < CIS INST PC
  (3)  061340  010600                            MOV     #FORM44,-(SP)
  (4)  061342  004737  066232                    MOV     SP,R0
                                                 JSR PC,FPRINT
14246  061346                                    PRINTB #FORM45          ;MSG: SUSPECT THAT CIS INST BACKED UP TOO FAR
  (6)  061346  012746  015254                    MOV     #FORM45,-(SP)
  (3)  061352  010600                            MOV     SP,R0
  (4)  061354  004737  066232                    JSR PC,FPRINT
14247  061360                                    PRINTB #FORM46          ;MSG:    WHEN SERVICING INTERRUPT
  (6)  061360  012746  015333                    MOV     #FORM46,-(SP)
  (3)  061364  010600                            MOV     SP,R0
  (4)  061366  004737  066232                    JSR PC,FPRINT
14248  061372  012737  000001  001114            MOV #1,$MSGTY           ;TELL APT THERE IS A FATAL ERROR        ;;REV-C
14249  061400  000000                  102$:     HALT                    ;BIT 8 OF PSW SET WITH PC < CIS INST PC.
14250  061402  042766  000400  000002            BIC #400,2(SP)          ;SUSPECT THAT CIS INST BACKED UP PC TOO FAR
14251                                             ;  WHEN SERVICING INTERRUPT.
14252                                             ;PRESS CONTINUE TO PROCEED WITH TESTING
14253  061410  005237  002562            17$:    INC INTRVL
14254  061414  013777  002562  121104    13$:    MOV INTRVL,@PC1CSB      ;INCREASE INTERVAL
14255  061422  004737  062102                    JSR PC,RGPR06           ;RESTORE REGISTERS
14256  061426  005726                            TST (SP)+               ;FIX UP STACK POINTER
14257  061430  005726                            TST (SP)+
14258  061432  000137  050124                    JMP TOPC2               ;RETURN TO TURN ON PCLK-1 POINT
14259
14260  061436  004737  061650            15$:    JSR PC,RECLAT           ;RECORD LATENCY
14261  061442  032737  000100  050164            BIT #100,TINST          ;IS INST UNDER TEST AN IN-LINE INST
14262  061450  001433                            BEQ 20$                 ;BRANCH IF NO
14263  061452  021637  002220                    CMP (SP),ICOMPC         ;VERIFY THAT PC HAS BEEN ADJUSTED TO POINT
14264                                             ;  TO NEXT INST
14265  061456  103030                            BHIS 20$                ;BRANCH IF PC IS OK
14266  061460                                    PRINTB #HLTMSG
  (6)  061460  012746  012173                    MOV     #HLTMSG,-(SP)
  (3)  061464  010600                            MOV     SP,R0
  (4)  061466  004737  066232                    JSR PC,FPRINT
14267  061472  012737  061536  002174            MOV #103$,HLTLOC
14268  061500  004737  055714                    JSR PC,IDINFO           ;IDENTIFY FAILING INST
14269  061504                                    PRINTB #FORM48          ;MSG: IN-LINE CIS INST COMPLETED WITH PC
  (6)  061504  012746  015465                    MOV     #FORM48,-(SP)
  (3)  061510  010600                            MOV     SP,R0
  (4)  061512  004737  066232                    JSR PC,FPRINT
14270  061516                                    PRINTB #FORM49          ;MSG: POINTING AT IN-LINE OPERANDS RATHER
  (6)  061516  012746  015543                    MOV     #FORM49,-(SP)
  (3)  061522  010600                            MOV     SP,R0
  (4)  061524  004737  066232                    JSR PC,FPRINT
14271  061530  012737  000001  001114            MOV #1,$MSGTY           ;TELL APT THERE IS A FATAL ERROR        ;;REV-C
14272                                             ;    THAN NEXT INST.
14273  061536  000000                  103$:     HALT                    ;PRESS CONTINUE TO PROCEED WITH TESTING
14274  061540  004737  062102            20$:    JSR PC,RGPR06           ;RESTORE REGISTERS
14275  061544  032766  000400  000002            BIT #400,2(SP)          ;CIS INST COMPLETE - VERIFY THAT PSW BIT 8
14276                                             ;  IS NOT SET
14277  061552  001423                            BEQ 16$
14278  061554                                    PRINTB #HLTMSG
  (6)  061554  012746  012173                    MOV     #HLTMSG,-(SP)
  (3)  061560  010600                            MOV     SP,R0
```

```
  (4)  061562  004737  066232                    JSR PC,FPRINT
14279  061566  012737  061620  002174            MOV #104$,HLTLOC
14280  061574  004737  055714                    JSR PC,IDINFO          ;IDENTIFY FAILING INST
14281  061600                                    PRINTB #FORM47         ;MSG: CIS INST COMPLETED BUT PSW BIT 8 STILL SET
  (6)  061600  012746  015404                    MOV     #FORM47,-(SP)
  (3)  061604  010600                            MOV     SP,R0
  (4)  061606  004737  066232                    JSR PC,FPRINT
14282  061612  012737  000001  001114            MOV #1,$MSGTY          ;TELL APT THERE IS A FATAL ERROR        ;;REV-C
14283  061620  000000                  104$:     HALT                   ;CIS INST COMPLETED BUT PSW BIT 8 STILL SET
14284                                             ;PRESS CONTINUE TO PROCEED WITH TESTING
14285  061622  042766  000400  000002  16$:      BIC #400,2(SP)
14286  061630  012777  000001  120670            MOV #1,@PC1CSB         ;SET UP FOR NEXT PASS
14287  061636  012737  000001  002562            MOV #1,INTRVL
14288  061644  000137  061202                    JMP 14$
14289
14290                                   ;KW11-P INTERRUPT SERVICE ROUTINE SUBROUTINES
14291                                   ;
14292                                   ;ROUTINE TO RECORD INTERRUPT LATENCY
14293                                   ;
14294  061650  163737  002562  002546  RECLAT:  SUB INTRVL,LATCT       ;CALCULATE LATENCY
14295  061656  005737  002564                    TST STOPLA             ;STOP ON EXCESSIVE LATENCY?
14296  061662  001427                            BEQ 2$                 ;BRANCH IF NO
14297  061664  023737  002564  002546            CMP STOPLA,LATCT       ;IS LATENCY EXCESSIVE?
14298  061672  101023                            BHI 2$                 ;BRANCH IF NO
14299  061674                                    PRINTB #HLTMSG
  (6)  061674  012746  012173                    MOV     #HLTMSG,-(SP)
  (3)  061700  010600                            MOV     SP,R0
  (4)  061702  004737  066232                    JSR PC,FPRINT
14300  061706  012737  000100  002174            MOV #100,HLTLOC
14301  061714  004737  055714                    JSR PC,IDINFO          ;IDENTIFY FAILING INST
14302  061720                                    PRINTB #LATEXC
  (6)  061720  012746  012260                    MOV     #LATEXC,-(SP)
  (3)  061724  010600                            MOV     SP,R0
  (4)  061726  004737  066232                    JSR PC,FPRINT
14303  061732  012737  000001  001114            MOV #1,$MSGTY          ;TELL APT THERE IS A FATAL ERROR        ;;REV-C
14304  061740  000000                  100$:     HALT                   ;LATENCY EXCEEDED USER DEFINED
14305                                             ;  'MAXIMUM ALLOWABLE'
14306
14307  061742  013701  002302          2$:       MOV OCTIC,R1           ;RECORD LATENCY
14308  061746  006301                            ASL R1
14309  061750  062701  004112                    ADD #ILATEN,R1         ;FORM POINTER INTO INST LATENCY TABLE
14310  061754  021137  002546                    CMP (R1),LATCT         ;IS LATENCY BIGGER THAN THAT ALREADY
14311                                             ;  RECORDED FOR INST?
14312  061760  101002                            BHI 1$                 ;BRANCH IF NO
14313  061762  013711  002546                    MOV LATCT,(R1)         ;SAVE NEW LATENCY VALUE
14314  061766  000207                  1$:       RTS PC
14315
14316                                   ;ROUTINE TO TURN ON P-CLK DURING DIVPI 'STATE DISTURBING' INST
14317                                   ;
14318  061770  017737  120524  002042  DIC:      MOV @PCLK1V,SPCV       ;SAVE CONTENTS OF P CLK INTERR VECTOR
14319  061776  013737  120400  002044            MOV PRECSK,TPRECS      ;SAVE CONTENTS OF 65TH STACK WORD
14320  062004  012777  060652  120506            MOV #PCIS3,@PCLK1V     ;SETUP INTR VECTOR
14321  062012  000207                  DI:       RTS PC                 ;OVERWRITTEN WITH A NOP IF USER REQUESTS
14322  062014  052777  000001  120502            BIS #1,@PC1CSR         ;TURN ON P-CLK1  - ENABLE INTR DURING
```

```
14323
14324  062022  000207                    RTS PC          ;  SUBSEQUENT (STATE DISTURBING) CIS INST
```

14327

```
14329                                   ;ROUTINE TO SAVE GENERAL PURPOSE REGISTERS 0 THROUGH 6.
14330                                   ;
14331  062024                           SGPR06:
14332  062024  010037  003010                  MOV R0,SGPR0
14333  062030  010137  003012                  MOV R1,SGPR1
14334  062034  010237  003014                  MOV R2,SGPR2
14335  062040  010337  003016                  MOV R3,SGPR3
14336  062044  010437  003020                  MOV R4,SGPR4
14337  062050  010537  003022                  MOV R5,SGPR5
14338  062054  032737  030000  177776        BIT #30000,PSW          ;WAS PREVIOUS MODE USER OR SUPV?
14339  062062  001404                        BEQ 1$                  ;BRANCH IF NO
14340  062064  006506                        MFPI SP                 ;GET PREVIOUS MODE SP
14341  062066  012637  003024                MOV (SP)+,SGPR6         ;STORE PREVIOUS MODE SP IN SGPR6
14342  062072  000402                        BR 2$
14343  062074  010637  003024          1$:   MOV SP,SGPR6
14344  062100  000207                  2$:   RTS PC
14345
14346                                   ;
14347                                   ;ROUTINE TO RESTORE GENERAL PURPOSE REGISTERS 0 THROUGH 5
14348                                   ;
14349  062102                           RGPR06:
14350  062102  013700  003010                  MOV SGPR0,R0
14351  062106  013701  003012                  MOV SGPR1,R1
14352  062112  013702  003014                  MOV SGPR2,R2
14353  062116  013703  003016                  MOV SGPR3,R3
14354  062122  013704  003020                  MOV SGPR4,R4
14355  062126  013705  003022                  MOV SGPR5,R5
14356                                                                  ;NOTE NO NEED TO RESTORE R6 BECAUSE IT HAS NOT CHANGED.
14357  062132  000207                        RTS PC
14358
14359                                   ;
14360                                   ;ROUTINE TO SAVE STATE OF CISP - STATE=STACK POINTER,GENERAL PURPOSE REGISTER
14361                                   ;  CONTENTS & STACK CONTENTS.
14362                                   ;
14363  062134                           SAVST:
14364  062134  016637  000004  002570          MOV 4(SP),STATPS        ;SAVE PSW STATE
14365  062142  013737  003010  002572          MOV SGPR0,STATR0        ;SAVE STATE OF GENERAL PURPOSE REGS 0-6
14366  062150  013737  003012  002574          MOV SGPR1,STATR1
14367  062156  013737  003014  002576          MOV SGPR2,STATR2
14368  062164  013737  003016  002600          MOV SGPR3,STATR3
14369  062172  013737  003020  002602          MOV SGPR4,STATR4
14370  062200  013737  003022  002604          MOV SGPR5,STATR5
14371  062206  013737  003024  002606          MOV SGPR6,STATR6
14372  062214  013700  003024                  MOV SGPR6,R0            ;SAVE STACK CONTENTS
14373  062220  062700  000006                  ADD #6,R0
14374  062224  020027  120602                  CMP R0,#CSTACK          ;DID CIS INST PUSH ANYTHING ONTO STACK?
14375  062230  103007                          BHIS 1$                 ;BRANCH IF NO
14376  062232  012702  003010                  MOV #SCSTK,R2           ;COPY USED PORTION OF STACK INTO A
14377  062236  012701  120602                  MOV #CSTACK,R1          ;  SAVE AREA.
14378  062242  014142                  2$:     MOV -(R1),-(R2)
14379  062244  020100                          CMP R1,R0               ;ALL OF USED PORTION OF STACK COPIED?
14380  062246  103375                          BHIS 2$                 ;BRANCH IF NO
14381  062250  000207                  1$:     RTS PC
14382
```

```
14383                                   ;
14384                                   ;ROUTINE TO CHECK FOR A CISP STATE CHANGE
14385                                   ;  RETURNS TO CALL ON NO CHANGE; CALL+2 ON CHANGE
14386                                   ;
14387  062252                          STATCG:
14388  062252  026637  000004  002570          CMP 4(SP),STATPS        ;DID PSW CHANGE?
14389  062260  001054                          BNE STHASC              ;BRANCH IF YES
14390  062262  023737  003024  002606          CMP SGPR6,STATR6        ;DID STACK POINTER CHANGE?
14391  062270  001050                          BNE STHASC              ;BRANCH IF YES
14392  062272  023737  003010  002572          CMP SGPR0,STATR0        ;DID ANY OF THE GENERAL PURPOSE REGISTER
14393                                          ;CONTENTS CHANGE?
14394  062300  001044                          BNE STHASC              ;BRANCH IF R0 CHANGED
14395  062302  023737  003012  002574          CMP SGPR1,STATR1
14396  062310  001040                          BNE STHASC              ;BRANCH IF R1 HAS CHANGED
14397  062312  023737  003014  002576          CMP SGPR2,STATR2
14398  062320  001034                          BNE STHASC              ;BRANCH IF R2 HAS CHANGED
14399  062322  023737  003016  002600          CMP SGPR3,STATR3
14400  062330  001030                          BNE STHASC              ;BRANCH IF R3 HAS CHANGED
14401  062332  023737  003020  002602          CMP SGPR4,STATR4
14402  062340  001024                          BNE STHASC              ;BRANCH IF R4 HAS CHANGED
14403  062342  023737  003022  002604          CMP SGPR5,STATR5        ;
14404  062350  001020                          BNE STHASC              ;BRANCH IF R5 HAS CHANGED
14405  062352  013700  003024                  MOV SGPR6,R0            ;DID THE STACK CONTENTS CHANGE
14406  062356  062700  000006                  ADD #6,R0
14407  062362  020027  120602                  CMP R0,#CSTACK          ;DID ANYTHING GET PUSHED ONTO THE STACK?
14408  062366  103010                          BHIS 1$                 ;BRANCH IF NO
14409  062370  012702  003010                  MOV #SCSTK,R2
14410  062374  012701  120602                  MOV #CSTACK,R1
14411  062400  024142                  2$:     CMP -(R1),-(R2)         ;DID ANY OF THE INFORMATION ON THE STACK GET CHANGED?
14412  062402  001003                          BNE STHASC              ;BRANCH IF YES
14413  062404  020100                          CMP R1,R0               ;ALL OF STACK CHECKED?
14414  062406  103374                          BHIS 2$                 ;BRANCH IF NO
14415  062410  000402                  1$:     BR NOSCHG
14416  062412  062716  000002          STHASC: ADD #2,(SP)
14417  062416  000207                  NOSCHG: RTS PC
14418
14420                                   ;ROUTINE TO CHECK FOR AND SETUP P-CLK 1
14421  062420                          PC1CK:                          ;TEST FOR P-CLKS PRESENT
14422  062420  013701  002542                  MOV TIMOUT,R1           ;SAVE TIME OUT VECTOR CONTENTS
14423  062424  011146                          MOV (R1),-(SP)
14424  062426  012721  062514                  MOV #1$,(R1)+
14425  062432  011146                          MOV (R1),-(SP)
14426  062434  005011                          CLR (R1)
14427
14428  062436  005777  120062                  TST @PC1CSR             ;ATTEMPT ACCESS P-CLK1 CSR
14429                                          ;PCLK1 IS RESPONDING
14430  062442  012777  060706  120050          MOV #PCIS1,@PCLK1V      ;SET UP P-CLK1 INTERRUPT SERVICE VECTOR
14431  062450  005077  120050                  CLR @PC1CSR             ;CLEAR P-CLK1 CSR
14432  062454  012777  000000  120042          MOV #000,@PC1CSR        ;SET P-CLK1 FOR SINGLE INT,COUNT DOWN,100K HZ
14433                                          ;  CLOCK, INT ENABLE
14434  062462  012777  000001  120036          MOV #1,@PC1CSB          ;SET COUNTER TO 1 (1 MICRO SEC INTERVAL
14435                                          ;  WITH 1 MHZ EXTERNAL CLOCK.
14436  062470  012737  000001  002562          MOV #1,INTRVL           ;SAVE INTERVAL SETTING
14437  062476  013737  002554  050134          MOV KNOP1,TOPC1         ;OVERWRITE BRANCH TO ALLOW TURNING ON OF
```

```
14438                                                           ;       PCLK1 PRIOR TO CIS INST EXECUTION
14439  062504  062766  000004  000004          ADD #4,4(SP)     ;ADJUST STACK FOR 'EXISTS RETURN'
14440  062512  000402                          BR 2$
14441  062514  005726                  1$:     TST (SP)+        ;FIX UP STACK POINTER
14442  062516  005726                          TST (SP)+
14443  062520  013701  002542          2$:     MOV TIMOUT,R1    ;RESTORE TIME OUT INTR VECTOR TO ORIGINAL STATE
14444  062524  012661  000002                  MOV (SP)+,2(R1)
14445  062530  012611                          MOV (SP)+,(R1)
14446  062532  000207                          RTS PC
14447
14448                                           ;ROUTINE TO CHECK FOR AND SETUP P-CLK2
14449  062534  013701  002542          PC2CK:  MOV TIMOUT,R1    ;SAVE TIME OUT VECTOR CONTENTS
14450  062540  011146                          MOV (R1),-(SP)
14451  062542  012721  062642                  MOV #1$,(R1)+
14452  062546  011146                          MOV (R1),-(SP)
14453  062550  005011                          CLR (R1)
14454  062552  005777  117756                  TST @PC2CSR      ;ATTEMPT ACCESS OF PCLK 2 CSR
14455  062556  012737  177777  002550          MOV #177777,LATEN ;SET LATENCY TESTING FLAG
14456  062564  012700  004112                  MOV #ILATEN,R0   ;CLEAR INTERRUPT LATENCY TABLE
14457  062570  005020                  12$:    CLR (R0)+
14458  062572  020027  004202                  CMP R0,#LATEND+2
14459  062576  001374                          BNE 12$
14460  062600  012777  060662  117712          MOV #PCIS2,@PCLK1V
14461  062606  005077  117722                  CLR @PC2CSR      ;CLEAR P-CLK2 CSR
14462  062612  012777  000020  117714          MOV #20,@PC2CSR  ;SET P-CLK2 FOR INT. DISABLE, COUNT UP
14463                                           ;  100KHZ CLOCK
14464  062620  005077  117712                  CLR @PC2CSB      ;SET COUNTER TO 0
14465  062624  013737  002556  050124          MOV KNOP2,TOPC2  ;OVERWRITE BRANCH TO ALLOW TURNING ON OF
14466                                           ;  PCLK2 PRIOR TO CIS INST EXECUTION
14467  062632  062766  000004  000004          ADD #4,4(SP)     ;ADJUST STACK FOR 'EXISTS RETURN'
14468  062640  000402                          BR 2$
14469  062642  005726                  1$:     TST (SP)+        ;FIX UP STACK POINTER
14470  062644  005726                          TST (SP)+
14471  062646  013701  002542          2$:     MOV TIMOUT,R1    ;RESTORE TIME OUT INTERRUPT VECTOR TO
14472  062652  012661  000002                  MOV (SP)+,2(R1)  ;  ORIGINAL STATE
14473  062656  012611                          MOV (SP)+,(R1)
14474  062660  000207                          RTS PC
```

```
14492                                   .SBTTL          LINE TIME CLOCK ROUTINES
14493                                   ;
14494                                   ; KW11-L (LINE TIME CLOCK) INTERRUPT SERVICE ROUTINE
14495                                   ;
14496  062662  013746  177572          LTCIS:  MOV @#MMR0,-(SP)        ;SAVE MEM MGMT STATE ON STACK - OVERWRITTEN WITH A
14497                                                                   ; BRANCH (405) IF NO MEM MGMT ON SYSTEM
14498  062666  005037  177572                  CLR @#MMR0             ;TURN OFF MEM MGMT
14499  062672  012637  002214                  MOV (SP)+,MMSTAT       ;RESTORE STACK TO PROPER POINT
14500  062676  042777  000100  120126          BIC #100,@CLKS         ;TURN OFF LTC
14501  062704  004737  062024                  JSR PC,SGPR06          ;SAVE GENERAL PURPOSE REGS 0-6
14502  062710  021627  050164                  CMP (SP),#TINST        ;INTERRUPTED THE CIS INST UNDER TEST?
14503  062714  001056                          BNE EXLTCS             ;NO - EXIT LTC SERVICE
14504  062716  004737  062252                  JSR PC,STATCG          ;HAS THE STATE OF CIS INST CHANGED?
14505  062722  000453                          BR EXLTCS              ;NO RETURN - EXIT LTC SERVICE
14506  062724  032766  000400  000002          BIT #400,2(SP)         ;YES RETURN - IS PSW BIT 8 SET?
14507  062732  001030                          BNE 1$                 ;BRANCH IF YES
14508  062734                                  PRINTB #HLTMSG
  (6)  062734  012746  012173                  MOV     #HLTMSG,-(SP)
  (3)  062740  010600                          MOV     SP,R0
  (4)  062742  004737  066232                  JSR PC,FPRINT
14509  062746  012737  063012  002174          MOV #100$,HLTLOC
14510  062754  004737  055714                  JSR PC,IDINFO          ;IDENTIFY FAILING INST
14511  062760                                  PRINTB #FORM42         ;MSG: CIS INST WAS SUSPENDED TO SERVICE INTR
  (6)  062760  012746  015031                  MOV     #FORM42,-(SP)
  (3)  062764  010600                          MOV     SP,R0
  (4)  062766  004737  066232                  JSR PC,FPRINT
14512  062772                                  PRINTB #FORM43         ;MSG: PSW BIT 8 SHOULD HAVE BEEN SET BUT WAS NOT
  (6)  062772  012746  015120                  MOV     #FORM43,-(SP)
  (3)  062776  010600                          MOV     SP,R0
  (4)  063000  004737  066232                  JSR PC,FPRINT
14513  063004  012737  000001  001114          MOV #1,$MSGTY          ;TELL APT THERE IS A FATAL ERROR        ;;REV-C
14514  063012  000000                  100$:   HALT
14515                                   
14516  063014  005237  002552          1$:     INC INTCT              ;UPDATE INTERRUPT COUNT
14517  063020  052737  040000  002136          BIS #40000,FATAL       ;SET INTR INDICATION IN FATAL ERROR WORD
14518  063026  013737  120400  002044          MOV PRECSK,TPRECS      ;SAVE CONTENTS OF 65TH STACK WORD
14519  063034  076175                          DIVPI                  ;DISTURB INTERNAL CISP STATE BY
14520  063036  003156                          DIVDS                  ;  EXECUTING A DIVP IN-LINE INST.
14521  063040  003156                          DIVDS
14522  063042  003162                          DIVDD
14523  063044  013737  002044  120400          MOV TPRECS,PRECSK      ;RESTORE 65TH STACK WORD
14524  063052  004737  062102          EXLTCS: JSR PC,RGPR06          ;RESTORE GENERAL PURPOSE REGS 0-6
14525  063056  005737  002162                  TST MMFLG              ;TESTING WITH MEM MGMT ON ?
14526  063062  001403                          BEQ 1$                 ;BRANCH IF NO
14527  063064  013737  002214  177572          MOV MMSTAT,@#MMR0      ;TURN ON MEM MGMT
14528  063072  000002                  1$:     RTI                    ;RETURN FROM SERVICE
```

```
14530
14531
14532                                   ;LTC SYNC UP ROUTINE
14533                                   ;
14534  063074                           LTCSUP:
14535  063074  012777  063116  117724           MOV #LSUPR,@LTCIV       ;SETUP LTC INTERRUPT VECTOR
14536  063102  005077  117724                   CLR @CLKS
14537  063106  052777  000100  117716           BIS #100,@CLKS          ;ENABLE INTERRUPTS
14538
14539  063114  000001                   1$:     WAIT                    ;WAIT FOR CLOCK SIGNAL
14540  063116  005077  117710           LSUPR:  CLR @CLKS               ;DISABLE LTC INTERRUPTS
14541  063122  012777  062662  117676           MOV #LTCIS,@LTCIV       ;RESTORE LTC INTERRUPT VECTOR
14542  063130  005726                           TST (SP)+               ;FIX UP STACK
14543  063132  005726                           TST (SP)+
14544  063134  000207                           RTS PC
14545
14546
14547                                   ;LTC  - DETERMINE COUNT PER CLOCK TICK
14548                                   ;
14549  063136                           LTCCNT:
14550  063136  012777  063164  117662           MOV #LTCINT,@LTCIV      ;SETUP LTC INTERRUPT SERVICE
14551  063144  005077  117662                   CLR @CLKS
14552  063150  052777  000100  117654           BIS #100,@CLKS          ;ENABLE INTERRUPTS
14553  063156  005237  003034           1$:     INC LCNT                ;COUNT TILL LTC INTERRUPTS
14554  063162  000775                           BR 1$
14555  063164  005077  117642           LTCINT: CLR @CLKS               ;DISABLE LTC INTERRUPTS
14556  063170  163737  003042  003034           SUB LTCDLY,LCNT         ;INTERRUPT RETURN
14557  063176  012777  062662  117622           MOV #LTCIS,@LTCIV       ;RESTORE LTC INTERRUPT VECTOR
14558  063204  005726                           TST (SP)+
14559  063206  005726                           TST (SP)+               ;FIX UP STACK
14560  063210  000207                           RTS PC
14561
14562
14563                                   ; LTC - ROUTINE TO CHECK FOR LINE TIME CLOCK ON SYSTEM
14564                                   ;
14565  063212                           LTCP:
14566  063212  013701  002542                   MOV TIMOUT,R1           ;SAVE TIME OUT VECTOR
14567  063216  011146                           MOV (R1),-(SP)          ;SETUP INTERRUPT VECTOR
14568  063220  012721  063256                   MOV #1$,(R1)+
14569  063224  011146                           MOV (R1),-(SP)
14570  063226  005011                           CLR (R1)
14571  063230  005777  117576                   TST @CLKS               ;ATTEMPT ACCESS OF LTC
14572  063234  005077  117572                   CLR @CLKS               ;CLEAR LTC CSR
14573  063240  013737  003040  050072           MOV KNOP4,TOLTC         ;OVERWRITE BRANCH TO ALLOW TURNING ON OF
14574                                                                    ;  OF LTC PRIOR TO CIS INST EXECUTION.
14575  063246  062766  000004  000004           ADD #4,4(SP)            ;ADJUST RETURN TO CALL + 4
14576  063254  000402                           BR 2$
14577  063256  005726                   1$:     TST (SP)+               ;FIX UP STACK POINTER
14578  063260  005726                           TST (SP)+
14579  063262  013701  002542           2$:     MOV TIMOUT,R1           ;RESTORE TIME OUT INTR VECTOR TO
14580  063266  012661  000002                   MOV (SP)+,2(R1)         ;  ORIGINAL STATE
14581  063272  012611                           MOV (SP)+,(R1)
14582  063274  000207                           RTS PC
14583                                   ;
```

```
14584                                   ;RANDOM EXERCISE MODE SUBROUTINES
14585                                   ;
14586
14587  063276                           SRNGST:                 ;SUBROUTINE TO SAVE RANDOM # GEN STATE
14588                                                           ;AT START OF EACH TEST
14589  063276  013737  064414  002002           MOV RNCON,STRNC
14590  063304  013737  064416  002004           MOV RP1,STRP1
14591  063312  013737  064420  002006           MOV RP2,STRP2
14592  063320  000207                           RTS PC
14593
14594  063322                           SRNGSX:                 ;SUBROUTINE TO SAVE RANDOM # GEN. STATE X.
14595  063322  013737  064414  002010           MOV RNCON,SXRNC
14596  063330  013737  064416  002012           MOV RP1,SXRP1
14597  063336  013737  064420  002014           MOV RP2,SXRP2
14598  063344  000207                           RTS PC
14599
14600  063346                           RRNGSX:                 ;SUBROUTINE TO RESTORE RANDOM # GEN STATE X.
14601  063346  013737  002010  064414           MOV SXRNC,RNCON
14602  063354  013737  002012  064416           MOV SXRP1,RP1
14603  063362  013737  002014  064420           MOV SXRP2,RP2
14604  063370  000207                           RTS PC
14605
14606  063372                           SRNGSY:                 ;SUBROUTINE TO SAVE RANDOM # GEN STATE Y.
14607  063372  013737  064414  002016           MOV RNCON,SYRNC
14608  063400  013737  064416  002020           MOV RP1,SYRP1
14609  063406  013737  064420  002022           MOV RP2,SYRP2
14610  063414  000207                           RTS PC
14611
14612  063416                           RRNGSY:                 ;SUBROUTINE TO RESTORE RANDOM # GEN STATE Y.
14613  063416  013737  002016  064414           MOV SYRNC,RNCON
14614  063424  013737  002020  064416           MOV SYRP1,RP1
14615  063432  013737  002022  064420           MOV SYRP2,RP2
14616  063440  000207                           RTS PC
14617
14618  063442                           SRNGSW:                 ;SUBROUTINE TO SAVE RANDOM # GEN STATE W.
14619  063442  013737  064414  002024           MOV RNCON,SWRNC
14620  063450  013737  064416  002026           MOV RP1,SWRP1
14621  063456  013737  064420  002030           MOV RP2,SWRP2
14622  063464  000207                           RTS PC
14623
14624  063466                           RRNGSW:                 ;SUBROUTINE TO RESTORE RANDOM # GEN STATE W.
14625  063466  013737  002024  064414           MOV SWRNC,RNCON
14626  063474  013737  002026  064416           MOV SWRP1,RP1
14627  063502  013737  002030  064420           MOV SWRP2,RP2
14628  063510  000207                           RTS PC
14629
14630  063512                           SRNGSV:                 ;SUBROUTINE TO SAVE RANDOM # GEN STATE V.
14631  063512  013737  064414  002032           MOV RNCON,SVRNC
14632  063520  013737  064416  002034           MOV RP1,SVRP1
14633  063526  013737  064420  002036           MOV RP2,SVRP2
14634  063534  000207                           RTS PC
14635
14636  063536                           RRNGSV:                 ;SUBROUTINE TO RESTORE RANDOM # GEN STATE V.
14637  063536  013737  002032  064414           MOV SVRNC,RNCON
```

```
14638  063544  013737  002034 ,064416          MOV SVRP1,RP1
14639  063552  013737  002036  064420          MOV SVRP2,RP2
14640  063560  000207                          RTS PC
14641
```

```
14643                                   .SBTTL          RANDOM MODE SUBROUTINES
14644                                   ;
14645                                   ;SUBROUTINE TO GENERATE A RANDOM CIS INST AND LOAD ITS IDENTIFIER
14646                                   ;(REFERENCE THE OINST TABLE) INTO THE FIRST WORD OF THE DUMMY
14647                                   ;INPUT TABLE. THIS ROUTINE ONLY GENERATES CIS INSTS WHICH HAVE A NON-ZERO
14648                                   ;ENCODING IN THE OINST TABLE.  ZERO OINST TABLE ENTRIES ASSOC WITH CIS INST
14649                                   ;NOT TO BE INCLUDED IN THE RANDOM EXERCISING.
14650                                   ;
14651  063562                           GENRI:
14652  063562  004737  064334                  JSR PC,RN               ;GET A RANDOM #
14653  063566  042700  177740                  BIC #BS128,R0           ;MASK OFF ALL BUT LEAST SIGNIF 5 BITS
14654  063572  005200                          INC R0
14655  063574  020027  000031                  CMP R0,#31              ;VALID IDENTIFIERS = 1 TO 31
14656  063600  101370                          BHI GENRI               ;BRANCH IF IDENTIFIER IS INVALID
14657  063602  010037  072776                  MOV R0,IDUM             ;LOAD INST IDENTIFIER INTO DUMMY INPUT TABLE
14658  063606  006300                          ASL R0
14659  063610  062700  003732                  ADD #OINST,R0           ;VERIFY THAT GENERATED INST IS
14660  063614  005710                          TST (R0)                ;A MEMBER OF THE SET OF CIS INSTS
14661  063616  001761                          BEQ GENRI               ;TO BE RANDOMLY EXERCISED.
14662  063620  000207                          RTS PC
14663                                   ;
14664                                   ;ROUTINE TO LOAD UP DUMMY INPUT TABLE USING RANDOM NUMBER GENERATOR.
14665                                   ;ROUTINE USES THE RANDOM EXERCISE MASK TABLES TO LIMIT OPERANDS
14666                                   ;(LENGTHS,ADDRESSES,ETC) TO THE PROPER RANGE.
14667                                   ;
14668  063622  012702  073002          LDINPT: MOV #IDUM+4,R2          ;SETUP POINTER INTO DUMMY TABLE
14669  063626  013701  072776                  MOV IDUM,R1
14670  063632  006301                          ASL R1
14671  063634  062701  004202                  ADD #MINST,R1
14672  063640  011101                          MOV (R1),R1
14673  063642  012137  001770          1$:     MOV (R1)+,PMASK         ;GET MASK FOR GIVEN INPUT PARAMETER
14674  063646  022737  125252  001770          CMP #EOT,PMASK          ;IS MASK=END OF MASK TABLE (EOT)
14675  063654  001431                          BEQ IDFLD               ;BRANCH IF YES
14676  063656  022737  152525  001770          CMP #DSCPTR,PMASK       ;DOES MASK INDICATE THAT INPUT
14677                                                                  ;PARAMETER IS A DESCRIPTOR POINTER?
14678  063664  001003                          BNE 2$                  ;BRANCH IF NO
14679  063666  012722  002514                  MOV #RANDSC,(R2)+       ;FILL TABLE ENTRY WITH A RANDOM
14680  063672  000763                          BR 1$                   ;DESCRIPTOR POINTER.
14681  063674  032737  100000  001770  2$:     BIT #100000,PMASK       ;MASK AND OFFSET?
14682  063702  001010                          BNE 3$                  ;BRANCH IF NO(MASK ONLY).
14683  063704  004737  064334                  JSR PC,RN               ;GENERATE A RANDOM #
14685  063710  042700  176000                  BIC #BS4,R0             ;MASK WITH 176000
14690  063714  063700  001770                  ADD PMASK,R0            ;ADD IN OFFSET
14691  063720  010022                          MOV R0,(R2)+            ;STORE INPUT PARAMETER
14692  063722  000747                          BR 1$
14693  063724  004737  064334          3$:     JSR PC,RN               ;GENERATE A RANDOM NUMBER
14694  063730  043700  001770                  BIC PMASK,R0            ;MASK TO VALID RANGE
14695  063734  010022                          MOV R0,(R2)+            ;STORE INPUT PARAMETER IN DUMMY TABLE
14696  063736  000741                          BR 1$
14697  063740  005022                  IDFLD:  CLR (R2)+               ;CLEAR REMAINDER OF DUMMY INPUT TABLE
14698  063742  020227  073050                  CMP R2,#IDUME
14699  063746  001374                          BNE IDFLD
14700  063750  022737  000020  072776          CMP #20,IDUM            ;IS RANDOM MODE INST = ASHP OR ASHN?
14701  063756  001404                          BEQ 1$                  ;BRANCH IF YES
```

```
14702  063760  022737  000030  072776          CMP #30,IDUM
14703  063766  001007                          BNE 2$                  ;BRANCH IF NO
14704  063770  123727  073007  000011  1$:     CMPB IDUM+11,#11        ;YES - LIMIT ROUND DIGIT TO 0 - 9
14705  063776  101403                          BLOS 2$
14706  064000  142737  000010  073007          BICB #10,IDUM+11                ;CONVERT INVALID DIGIT TO A VALID ONE
14707  064006  022737  000003  072776  2$:     CMP #3,IDUM             ;IS RANDOM INST = MOVTC
14708  064014  001006                          BNE 3$                  ;BRANCH IF NO
14709  064016  013737  073032  002176          MOV IDUM+34,IRXLT       ;ADJUST IP15 FOR PROPER LEVEL OF INDIRECTING
14710  064024  012737  002176  073032          MOV #IRXLT,IDUM+34
14711  064032  000207                  3$:     RTS PC
14712
14713                                   ;ROUTINE TO LOAD MISCELLANEOUS CONSTANTS USING RANDOM NUMBER GENERATOR
14714                                   ;
14715  064034                           LDCON:
14716  064034  004737  064334                  JSR PC,RN
14717  064040  010037  001660                  MOV R0,INCSQ1           ;LOAD TEST BUFFER INCREMENTING SEQUENCE
14718  064044  004737  064334                  JSR PC,RN               ;  SEED WITH A RANDOM #
14719  064050  010037  001662                  MOV R0,INCSQ2
14720  064054  000207                          RTS PC
14721
14722                                   ;
14723                                   ;ROUTINE TO ACKNOWLEDGE OPERATOR REQUESTS
14724                                   ;       CNTL T - DISPLAY CURRENT TEST #(DECIMAL) THEN RETURN TO CALL+6
14725                                   ;       CNTL C - RETURN TO CALL+2
14726                                   ;       CNTL D - SET DISPLAY AND NO QUERY SWITCH. THEN RETURN TO CALL + 6
14727                                   ;       CNTL E - SET DISPLAY SWITCH. THEN RETURN TO CALL + 6
14728                                   ;       CNTL N - CLEAR DISPLAY SWITCH. THEN RETURN TO CALL + 6
14729                                   ;       CNTL O - TOGGLE PROGRESS DISPLAY SWITCH. THEN RETURN TO CALL +6
14730                                   ;       OTHER - RETURN TO CALL+6
14731                                   ;
14732  064056                           EXTBK:
14733  064056  105777  115604                  TSTB @TKS               ;CHAR THERE?                                    ;;REV-C
14734  064062  100063                          BPL 1$                  ;NO - EXIT ROUTINE
14735  064064  117737  115622  065600          MOVB @TKB,RCHAR         ;READ AND SAVE TTY CHAR
14736  064072  042737  177600  065600  8$:     BIC #^C177,RCHAR        ;GET RID OF JUNK IF ANY
14737  064100  023727  065600  000003          CMP RCHAR,#003          ;IS CHAR A CNTL C?
14738  064106  001453                          BEQ 2$                  ;BRANCH IF YES
14739  064110  023727  065600  000024          CMP RCHAR,#024          ;IS CHAR A CNTL T?
14740  064116  001003                          BNE 3$
14741  064120  004737  064240                  JSR PC,IDINST
14742  064124  000442                          BR 1$
14743  064126  023727  065600  000004  3$:     CMP RCHAR,#004          ;IS CHAR A CNTL D?
14744  064134  001007                          BNE 5$
14745  064136  012737  177777  002046          MOV #177777,NOERDS      ;SET DISPLAY SWITCH
14746  064144  012737  177777  002210          MOV #177777,QRYFLG      ;SET QUERY FOR DISPLAY BUFFER FLAG
14747  064152  000427                          BR 1$
14748  064154  023727  065600  000005  5$:     CMP RCHAR,#005          ;IS CHAR A CNTL E?
14749  064162  001004                          BNE 6$                  ;BRANCH IF NO
14750  064164  012737  177777  002046          MOV #177777,NOERDS      ;SET DISPLAY SWITCH
14751  064172  000417                          BR 1$
14752  064174  023727  065600  000017  6$:     CMP RCHAR,#017          ;IS CHAR A CNTL O?
14753  064202  001003                          BNE 4$                  ;BRANCH IF NO
14754  064204  005137  002050                  COM PROGD               ;TOGGLE PROGRESS DISPLAY SWITCH
14755  064210  000410                          BR 1$
```

```
14756  064212  023727  065600  000016  4$:     CMP RCHAR,#016          ;IS CHAR A CNTL N?
14757  064220  001004                          BNE 1$
14758  064222  005037  002046                  CLR NOERDS              ;YES - CLEAR NO ERROR DISPLAY SWITCH
14759  064226  005037  002210                  CLR QRYFLG              ;CLEAR QUERY SWITCH
14760  064232  062716  000004          1$:     ADD #4,(SP)             ;RETURN TO CALL+6
14761  064236  000207                  2$:     RTS PC
14762
14763                                  ;ROUTINE TO DISPLAY CURRENT INST AND TEST #
14764
14765  064240                          IDINST:
14766  064240  012737  177777  001766          MOV #177777,CTACT       ;SET CONTROL T ACTIVE FLAG
14767  064246                                  PRINTB #FORM21          ;PRINT A CRLF
  (6)  064246  012746  014160                  MOV     #FORM21,-(SP)
  (3)  064252  010600                          MOV     SP,R0
  (4)  064254  004737  066232                  JSR PC,FPRINT
14768  064260  004777  115662                  JSR PC,@EMPTR           ;PRINT INST & TEST #
14769  064264  000207                          RTS PC
14770
14771
14772                                  ;ROUTINE TO RANDOMIZE PACKED STRING DATA TYPE
14773                                  ;
14774  064266                          RPTYPE:
14775  064266  004737  064334                  JSR PC,RN               ;GET A RANDOM #
14776  064272  032700  000001                  BIT #1,R0               ;USE BIT 0 OF THE RANDOM # TO SELECT BETWEEN
14777  064276  001403                          BEQ 1$                  ; THE TWO TYPES FOR PACKED STRINGS (6,7).
14778  064300  012700  000007                  MOV #7,R0
14779  064304  000402                          BR 10$
14780  064306  012700  000006          1$:     MOV #6,R0
14781  064312  000207                  10$:    RTS PC
14782
14783                                  ;ROUTINE TO RANDOMIZE ZONED STRING DATA TYPES
14784                                  ;
14785  064314                          RZTYPE:
14786  064314  004737  064334                  JSR PC,RN               ;GET A RANDOM #
14787  064320  042700  177770                  BIC #177770,R0          ;USE BITS 0,1 & 2 TO SELECT BETWEEN
14788  064324  020027  000005                  CMP R0,#5               ; THE 6 TYPES FOR ZONED STRINGS
14789  064330  101371                          BHI RZTYPE
14790  064332  000207                          RTS PC
14791
14792                                  ;ROUTINE TO GENERATE A PSEUDO RANDOM NUMBER
14793                                  ;
14794                                  ;INPUTS:        NONE
14795                                  ;OUTPUTS:       PSEUDO RANDOM VALUE IN R0
14796                                  ;
14797                                  ;
14798  064334                          RN:
14799  064334  013700  064416                  MOV RP1,R0
14800  064340  000241                          CLC
14801  064342  005337  064414                  DEC RNCON
14802  064346  006100                          ROL R0
14803  064350  006100                          ROL R0
14804  064352  063700  064414                  ADD RNCON,R0
14805  064356  063700  064420                  ADD RP2,R0
14806  064362  010037  064416                  MOV R0,RP1
```

```
14807  064366  006100                          ROL R0
14808  064370  006100                          ROL R0
14809  064372  063700  064420                  ADD RP2,R0
14810  064376  006100                          ROL R0
14811  064400  006100                          ROL R0
14812  064402  010037  064420                  MOV R0,RP2
14813  064406  013700  064416                  MOV RP1,R0
14814  064412  000207                          RTS PC
14815  064414  000000              RNCON:      .WORD 0                 ;RANDOM # GENERATOR SEEDS
14816  064416  001233              RP1:        .WORD 1233
14817  064420  007622              RP2:        .WORD 7622
14818  064422  000000              KRNCON:     .WORD 0
14819  064424  001233              KRP1:       .WORD 1233
14820  064426  007622              KRP2:       .WORD 7622
14821
```

```
14823                                   .SBTTL          MESSAGE PRINT ROUTINES
14824                                   ;++++++
14825                                   ;
14826                                   ;ERROR MESSAGE PRINT ROUTINES
14827                                   ;       RETURNS TO CALL +2 FOR REPEAT TEST
14828                                   ;       RETURNS TO CALL +6 FOR NORMAL RETURN
14829                                   ;
14830                                   ;------
14831  064430                           INSERR:
14832  064430  004777  115512                  JSR     PC,@EMPTR       ;PRINT ERROR MESSAGE HEADER
14833  064434  032737  000100  050164          BIT     #100,TINST      ;INST UNDER TEST TYPE?
14834  064442  001406                          BEQ     11$             ;BRANCH IF REGISTER TYPE
14835  064444                                  PRINTB  #INMEM          ;IN-LINE TYPE
  (6)  064444  012746  011124                  MOV     #INMEM,-(SP)
  (3)  064450  010600                          MOV     SP,R0
  (4)  064452  004737  066232                  JSR PC,FPRINT
14836  064456  000405                          BR      12$
14837  064460                           11$:    PRINTB  #INREG
  (6)  064460  012746  011076                  MOV     #INREG,-(SP)
  (3)  064464  010600                          MOV     SP,R0
  (4)  064466  004737  066232                  JSR PC,FPRINT
14838  064472                           12$:    PRINTB  #FORM13,ER0,ER1,ER2,ER3,ER4,ER5,TR6,<B,TCC>
  (14) 064472  005046                          CLR     -(SP)
  (14) 064474  153716  003652                  BISB    TCC,(SP)
  (13) 064500  013746  003650                  MOV     TR6,-(SP)
  (12) 064504  013746  003706                  MOV     ER5,-(SP)
  (11) 064510  013746  003704                  MOV     ER4,-(SP)
  (10) 064514  013746  003702                  MOV     ER3,-(SP)
   (9) 064520  013746  003700                  MOV     ER2,-(SP)
   (8) 064524  013746  003676                  MOV     ER1,-(SP)
   (7) 064530  013746  003674                  MOV     ER0,-(SP)
   (6) 064534  012746  011200                  MOV     #FORM13,-(SP)
   (3) 064540  010600                          MOV     SP,R0
   (4) 064542  004737  066232                  JSR PC,FPRINT
14839  064546                                  PRINTB  #EMOUT
  (6)  064546  012746  011152                  MOV     #EMOUT,-(SP)
  (3)  064552  010600                          MOV     SP,R0
  (4)  064554  004737  066232                  JSR PC,FPRINT
14840  064560                                  PRINTB  #FORM14,ER0R,ER1R,ER2R,ER3R,ER4R,ER5R,ER6R,<B,ECCR>
  (14) 064560  005046                          CLR     -(SP)
  (14) 064562  153716  003730                  BISB    ECCR,(SP)
  (13) 064566  013746  003726                  MOV     ER6R,-(SP)
  (12) 064572  013746  003724                  MOV     ER5R,-(SP)
  (11) 064576  013746  003722                  MOV     ER4R,-(SP)
  (10) 064602  013746  003720                  MOV     ER3R,-(SP)
   (9) 064606  013746  003716                  MOV     ER2R,-(SP)
   (8) 064612  013746  003714                  MOV     ER1R,-(SP)
   (7) 064616  013746  003712                  MOV     ER0R,-(SP)
   (6) 064622  012746  011260                  MOV     #FORM14,-(SP)
   (3) 064626  010600                          MOV     SP,R0
   (4) 064630  004737  066232                  JSR PC,FPRINT
14841  064634  005737  002152                  TST     ERRREG          ;WAS THERE A REGISTER ERROR?
14842  064640  001440                          BEQ     1$
14843  064642                                  PRINTB  #ACOUT          ;YES - PRINT OUT DISCREPANCIES
```

```
   (6)  064642  012746  011340                MOV     #ACOUT,-(SP)
   (3)  064646  010600                        MOV     SP,R0
   (4)  064650  004737  066232                JSR PC,FPRINT
14844   064654  012701  003654                MOV     #TR0R,R1
14845   064660  012702  003712                MOV     #ER0R,R2
14846   064664  021122              5$:       CMP     (R1),(R2)+      ;COMPARE ACTUAL WITH EMULATOR REGS.
14847   064666  001412                        BEQ     2$
14848   064670  011137  002274                MOV     (R1),TERR       ;NOT EQUAL - PRINT ACTUAL
14849   064674                                PRINTB  #FORM15,TERR
   (7)  064674  013746  002274                MOV     TERR,-(SP)
   (6)  064700  012746  011366                MOV     #FORM15,-(SP)
   (3)  064704  010600                        MOV     SP,R0
   (4)  064706  004737  066232                JSR PC,FPRINT
14850   064712  000405                        BR      3$
14851   064714              2$:       PRINTB  #FORM16         ;EQUAL - PRINT SPACES
   (6)  064714  012746  011375                MOV     #FORM16,-(SP)
   (3)  064720  010600                        MOV     SP,R0
   (4)  064722  004737  066232                JSR PC,FPRINT
14852   064726  020127  003670      3$:       CMP     R1,#TR6R        ;ALL REGISTERS COMPARED?
14853   064732  001424                        BEQ     4$              ;BRANCH IF YES
14854   064734  062701  000002                ADD     #2,R1
14855   064740  000751                        BR      5$              ;LOOK AT NEXT REGISTER
14856   064742  005737  002150      1$:       TST     ERRCC           ;WAS THERE A CONDITION CODE ERROR?
14857   064746  001431                        BEQ     6$
14858   064750                                PRINTB  #ACOUT          ;YES - PRINT ACTUAL COND. CODES
   (6)  064750  012746  011340                MOV     #ACOUT,-(SP)
   (3)  064754  010600                        MOV     SP,R0
   (4)  064756  004737  066232                JSR PC,FPRINT
14859   064762                                PRINTB  #FORM17,<B,TCCR>
   (7)  064762  005046                        CLR     -(SP)
   (7)  064764  153716  003672                BISB    TCCR,(SP)
   (6)  064770  012746  011401                MOV     #FORM17,-(SP)
   (3)  064774  010600                        MOV     SP,R0
   (4)  064776  004737  066232                JSR PC,FPRINT
14860   065002  000413                        BR      6$
14861   065004  005737  002150      4$:       TST     ERRCC
14862   065010  001410                        BEQ     6$
14863   065012                                PRINTB  #FORM18,<B,TCCR>
   (7)  065012  005046                        CLR     -(SP)
   (7)  065014  153716  003672                BISB    TCCR,(SP)
   (6)  065020  012746  011411                MOV     #FORM18,-(SP)
   (3)  065024  010600                        MOV     SP,R0
   (4)  065026  004737  066232                JSR PC,FPRINT
14864   065032  004737  067170      6$:       JSR PC,PRNIB            ;GO CHECK FOR POSSIBLE NIBBLE PRINTOUT.
14865   065036  005037  002300                CLR FILLS2
14866   065042  005737  002154                TST     ERRBUF          ;WAS THERE A BUFFER ERROR?
14867   065046  001422                        BEQ     LODT
14868   065050                                PRINTB  #EBUF0,EMADR,EMDTA      ;YES PRINT FIRST BUFFER
   (8)  065050  013746  002206                MOV     EMDTA,-(SP)
   (7)  065054  013746  002204                MOV     EMADR,-(SP)
   (6)  065060  012746  011415                MOV     #EBUF0,-(SP)
   (3)  065064  010600                        MOV     SP,R0
   (4)  065066  004737  066232                JSR PC,FPRINT
14869   065072                                PRINTB  #ABUF0,AEADR,AEDTA      ;   BYTE DISCREPANCY.
```

```
   (8)  065072  013746  002202                    MOV     AEDTA,-(SP)
   (7)  065076  013746  002200                    MOV     AEADR,-(SP)
   (6)  065102  012746  011452                    MOV     #ABUF0,-(SP)
   (3)  065106  010600                            MOV     SP,R0
   (4)  065110  004737  066232                    JSR PC,FPRINT
14870   065114                          LODT:
14871   065114  005737  002210                    TST     QRYFLG          ;INHIBIT BUFFER QUERY?
14872   065120  001110                            BNE     ERMDON          ;YES
14873   065122  104401                            TYPE
14874   065124  011503                            QDISP
14875   065126  004737  065350                    JSR     PC,YORN         ;DISPLAY BUFFER?
14876   065132  000137  065316                    JMP     3$              ;CONTINUE (C) RETURN
14877   065136  000137  065152                    JMP     1$              ;DISPLAY MEMORY (D) RETURN
14878   065142  000137  065346                    JMP     LERMD           ;REPEAT TEST (R) RETURN
14879   065146  000137  065336                    JMP     RTSUPV          ;RESTART (S) RETURN
14880   065152  104401                    1$:     TYPE                    ;PRINT 'ADDR(S)?'
14881   065154  013767                            AST
14882   065156  004737  065602                    JSR     PC,RANGE        ;GET RANGE OF LOCATIONS TO DISPLAY
14883   065162  000754                            BR      LODT            ;NO MORE DISPLAY REQUESTED-RETURN
14884   065164                                    PRINTB  #ADDHDR         ;PRINT BYTE HEADER
   (6)  065164  012746  014041                    MOV     #ADDHDR,-(SP)
   (3)  065170  010600                            MOV     SP,R0
   (4)  065172  004737  066232                    JSR PC,FPRINT
14885   065176  004737  066156                    JSR     PC,FILLPB       ;FILL PRINT BUFFER
14886   065202  000763                            BR      1$              ;RANGE EXHAUSTED RETURN
14887   065204                                    PRINTB  #FORM19,BAD,<B,PB0>,<B,PB1>,<B,PB2>,<B,PB3>
  (11)  065204  005046                            CLR     -(SP)
  (11)  065206  153716  003151                    BISB    PB3,(SP)
  (10)  065212  005046                            CLR     -(SP)
  (10)  065214  153716  003150                    BISB    PB2,(SP)
   (9)  065220  005046                            CLR     -(SP)
   (9)  065222  153716  003147                    BISB    PB1,(SP)
   (8)  065226  005046                            CLR     -(SP)
   (8)  065230  153716  003146                    BISB    PB0,(SP)
   (7)  065234  013746  002232                    MOV     BAD,-(SP)
   (6)  065240  012746  014002                    MOV     #FORM19,-(SP)
   (3)  065244  010600                            MOV     SP,R0
   (4)  065246  004737  066232                    JSR PC,FPRINT
14888   065252                                    PRINTB  #FORM20,<B,PB4>,<B,PB5>,<B,PB6>,<B,PB7>
  (10)  065252  005046                            CLR     -(SP)
  (10)  065254  153716  003155                    BISB    PB7,(SP)
   (9)  065260  005046                            CLR     -(SP)
   (9)  065262  153716  003154                    BISB    PB6,(SP)
   (8)  065266  005046                            CLR     -(SP)
   (8)  065270  153716  003153                    BISB    PB5,(SP)
   (7)  065274  005046                            CLR     -(SP)
   (7)  065276  153716  003152                    BISB    PB4,(SP)
   (6)  065302  012746  014125                    MOV     #FORM20,-(SP)
   (3)  065306  010600                            MOV     SP,R0
   (4)  065310  004737  066232                    JSR PC,FPRINT
14889   065314  000730                            BR      2$
14890   065316  005737  002222            3$:     TST STOPTF              ;IS THE STOP TEST FLAG SET?
14891   065322  001404                            BEQ 4$                  ;BRANCH IF NO
14892   065324  005037  002222                    CLR STOPTF              ;CLEAR FLAG WHICH WILL CAUSE PROG TO
```

```
14893                                                           ; TO QUERY FOR STOP TEST # AGAIN
14894  065330  005037  002046                 CLR NOERDS
14895  065334  000402                 4$:     BR ERMDON
14896  065336  062716  000004         RTSUPV: ADD #4,(SP)             ;RETURN TO RESTART AT LOC 'START'
14897  065342  062716  000004         ERMDON: ADD #4,(SP)             ;NORMAL RETURN TO CALL +6
14898  065346  000207                 LERMD:  RTS PC                  ;REPEAT TEST RETURN TO CALL +2
14899                                  ;
14900                                  ;SUBROUTINE TO ACCEPT Y,N,C,R,S,D OR H RESPONSE FROM TTY. RETURNS TO CALL +2
14901                                  ;   ON N OR C RESPONSE; CALL +4 ON A Y OR D RESPONSE; CALL +6 ON AN R OR H RESPONSE;
14902                                  ;   AND CALL +10 ON AN S RESPONSE.
14903  065350                         YORN:
14904  065350  105777  114312         1$:     TSTB    @TKS            ;WAIT FOR A CHARACTER
14905  065354  100375                         BPL     1$
14906  065356  117737  114330  065600         MOVB    @TKB,RCHAR      ;READ & SAVE CHAR
14907  065364  032737  000100  065600         BIT     #100,RCHAR      ;CONVERT LOWER CASE INPUT TO UPPER
14908  065372  001403                         BEQ     12$             ;  CASE LETTERS
14909  065374  042737  000040  065600         BIC     #40,RCHAR       ;
14910  065402  042737  177600  065600 12$:    BIC     #^C177,RCHAR    ;GET RID OF JUNK IF ANY
14911  065410  023727  065600  000123         CMP     RCHAR,#123      ;IS CHAR AN S ?
14912  065416  001450                         BEQ     5$              ;BRANCH IF YES
14913  065420  023727  065600  000110         CMP     RCHAR,#110      ;IS CHAR A H
14914  065426  001003                         BNE     6$              ;BRANCH IF NO
14915  065430  005037  050144                 CLR     PREINS          ;INSERT A HALT IMMEDIATELY BEFORE
14916                                                                  ; THE CIS INST UNDER TEST. THEN REPEAT TEST.
14917  065434  000407                         BR 10$
14918  065436  023727  065600  000122 6$:     CMP     RCHAR,#122      ;IS CHAR R
14919  065444  001011                         BNE 7$                  ;BRANCH IF NO
14920  065446  013737  001670  050144         MOV KNOP,PREINS         ;RESTORE NOP TO INST IMMED BEFOR CIS INST UNDER TEST
14921  065454  012737  177777  002276 10$:    MOV #177777,RPTFLG      ;SET REPEAT TEST FLAG
14922  065462  005337  002060                 DEC ERRCT               ;DECREMENT ERROR COUNT SO THAT ERROR COUNT
14923                                                                  ;  DOESN'T ADVANCE ON REPEAT OF TEST
14924  065466  000426                         BR 4$
14925  065470  023727  065600  000131 7$:     CMP     RCHAR,#131      ;IS CHAR = Y
14926  065476  001424                         BEQ     2$
14927  065500  023727  065600  000104         CMP     RCHAR,#104      ;IS CHAR = D?
14928  065506  001420                         BEQ 2$
14929  065510  023727  065600  000116         CMP     RCHAR,#116      ;NO - IS CHAR = N
14930  065516  001404                         BEQ     11$
14931  065520  023727  065600  000103         CMP     RCHAR,#103      ;IS CHAR = C?
14932  065526  001310                         BNE 1$
14933  065530  013737  001670  050144 11$:    MOV KNOP,PREINS         ;RESTORE NOP TO INST IMMED BEFORE CIS INST UNDER TEST
14934  065536  000406                         BR      3$              ;YES - RETURN - CALL +2
14935  065540  062716  000004         5$:     ADD     #4,(SP)
14936  065544  062716  000004         4$:     ADD     #4,(SP)
14937  065550  062716  000004         2$:     ADD     #4,(SP)         ;CHAR = Y OR D SETUP RETURN - CALL +4
14938  065554  004737  065562         3$:     JSR     PC,ECHAR        ;ECHO CHARACTER - WAIT FOR
14939  065560  000207                         RTS     PC              ;   PRINTER READY
14940                                                                  ;LOAD CHAR TO BE TYPED INTO DATA REG.
14941  065562  105777  114126         ECHAR:  TSTB    @TPS            ;SUBROUTINE TO PRINT CHAR IN 'RCHAR'
14942  065566  100375                         BPL     ECHAR           ;WAIT UNTIL PRINTER IS READY
14943  065570  113777  065600  114120         MOVB    RCHAR,@TPB      ;LOAD CHAR INTO DATA REG
14944  065576  000207                         RTS     PC
14945
14946  065600  000000         RCHAR:  .WORD   0
```

```
14947                                   ;
14948                                   ;SUBROUTINE TO GET RANGE OF LOCATIONS TO DISPLAY.
14949                                   ;   RETURNS TO CALL +2 ON NO MORE DISPLAY REQUESTED - USER
14950                                   ;   RESPONDED WITH IMMEDIATE 'CR'.
14951                                   ;   NORMAL RETURN IS TO CALL +4 WITH LOWER DISPLAY LIMIT
14952                                   ;   IN 'RLL' AND UPPER DISPLAY LIMIT IN 'RUL'.
14953  065602                           RANGE:                          ;NORMAL RETURN = CALL +4.
14954  065602  004737  065704                   JSR     PC,ACCOCT       ;GET RANGE LOWER LIMIT
14955  065606  000207                           RTS     PC              ;RETURN - EXIT DISPLAY
14956  065610  000411                           BR      1$              ;RETURN - SINGLE LIMIT SPECIFIED
14957  065612  012637  002226                   MOV     (SP)+,RLL       ;NORMAL RETURN - SAVE LOWER LIMIT
14958  065616  004737  065704                   JSR     PC,ACCOCT       ;GET RANGE UPPER LIMIT
14959  065622  000207                           RTS     PC              ;RETURN - EXIT DISPLAY
14960  065624  000411                           BR      2$              ;NORMAL RETURN - SAVE UPPER LIMIT
14961  065626  104401                           TYPE                    ;RETURN - TYPE? <CR><LF>REENTER:
14962  065630  015636                           QUES
14963  065632  000763                           BR      RANGE           ;TRY AGAIN
14964  065634  012637  002226           1$:     MOV     (SP)+,RLL       ;SINGLE LIMIT SPECIFIED - SAVE AS
14965  065640  013737  002226  002230           MOV     RLL,RUL         ;   BOTH LOWER & UPPER LIMIT
14966  065646  000402                           BR      3$              ;EXIT
14967  065650  012637  002230           2$:     MOV     (SP)+,RUL       ;SAVE UPPER LIMIT
14968  065654  042737  000007  002226   3$:     BIC     #7,RLL          ;ROUND OFF RANGE TO GROUP OF
14969  065662  042737  000007  002230           BIC     #7,RUL          ;TEN BYTES.
14970  065670  062737  000010  002230           ADD     #10,RUL
14971  065676  062716  000002                   ADD     #2,(SP)         ;EXIT TO CALL +4
14972  065702  000207                           RTS     PC
14973                                   ;
14974                                   ;SUBROUTINE TO ACCEPT OCTAL # FROM TTY. RETURNS TO CALL +2 ON INITIAL CR.
14975                                   ;   RETURNS TO CALL +4 ON <CR> OR / WITH LIMIT ON STACK. RETURNS TO CALL +6 ON <-> WITH
14976                                   ;   LIMIT ON STACK.
14977  065704                           ACCOCT:
14978  065704  005046                           CLR     -(SP)           ;CLEAR STORAGE FOR OCTAL #
14979  065706  105777  113754           1$:     TSTB    @TKS            ;CHAR THERE?
14980  065712  100375                           BPL     1$              ;NO - WAIT
14981  065714  117746  113772                   MOVB    @TKB,-(SP)      ;SAVE THE CHAR
14982  065720  042716  177600                   BIC     #^C177,(SP)     ;STRIP-OFF THE ASCII
14983  065724  022716  000021                   CMP     #021,(SP)       ;SEE IF A RANDOM ^Q WAS INPUTED         ;;REV-C
14984  065730  001002                           BNE     50$             ;BRANCH TO CONTINUE IF NOT              ;;REV-C
14985  065732  005726                           TST     (SP)+           ;POP THIS ^Q CHAR OFF STACK             ;;REV-C
14986  065734  000764                           BR      1$              ;BRANCH BACK - INPUT NOT WANTED         ;;REV-C
14987  065736  022726  000015           50$:    CMP     #15,(SP)+       ;IS IT A 'CR'?                          ;;REV-C
14988  065742  001005                           BNE     2$
14989  065744  104401                           TYPE                    ;YES - ECHO CR & LF
14990  065746  015652                           XCRLF
14991  065750  062706  000002                   ADD     #2,SP           ;RETURN TO CALL +2
14992  065754  000207                           RTS     PC
14993  065756  024627  000055           2$:     CMP     -(SP),#55       ;IS CHAR = '-'
14994  065762  001465                           BEQ     6$              ;BRANCH IF YES
14995  065764  021627  000057           3$:     CMP (SP),#57            ;IS CHAR A / ?
14996  065770  001403                           BEQ 31$
14997  065772  021627  000015                   CMP     (SP),#15        ;IS CHAR A <CR>?
14998  065776  001016                           BNE     4$
14999  066000  104401                   31$:    TYPE                    ;YES - ECHO/<CR> AND <LF>
15000  066002  015655                           SLCRLF
```

```
15001  066004  016616  000002          7$:     MOV     2(SP),(SP)      ;SWAP POSITION OF OCTAL #
15002  066010  016666  000004  000002          MOV     4(SP),2(SP)     ;AND RETURN PC ON STACK
15003  066016  011666  000004                  MOV     (SP),4(SP)
15004  066022  062706  000002                  ADD     #2,SP
15005  066026  062716  000002                  ADD     #2,(SP)         ;UPDATE RETURN POINTER
15006  066032  000207                          RTS     PC              ;RETURN WITH OCTAL LIMIT ON STACK
15007  066034  011637  065600          4$:     MOV     (SP),RCHAR      ;ECHO CHAR ACCEPTED
15008  066040  004737  065562                  JSR     PC,ECHAR
15009
15010  066044  021627  000060                  CMP     (SP),#60        ;CHAR <0?
15011  066050  002425                          BLT     5$              ;BRANCH IF YES
15012  066052  021627  000067                  CMP     (SP),#67        ;CHAR>7?
15013  066056  003022                          BGT     5$              ;BRANCH IF YES
15014  066060  042726  000060                  BIC     #60,(SP)+       ;STRIP OFF ASCII
15015  066064  006316                          ASL     (SP)            ;SHIFT PRESENT DATA OVER TO
15016  066066  006316                          ASL     (SP)            ;   MAKE ROOM FOR NEW DIGIT
15017  066070  006316                          ASL     (SP)
15018  066072  056616  177776                  BIS     -2(SP),(SP)     ;SET IN NEW DIGIT
15019  066076  105777  113564          10$:    TSTB    @TKS            ;CHAR THERE
15020  066102  100375                          BPL 10$                 ;NO - WAIT
15021  066104  117746  113602                  MOVB @TKB,-(SP)         ;SAVE CHAR
15022  066110  042716  177600                  BIC #^C177,(SP)                                 ;;REV-C
15023  066114  022726  000021                  CMP #021,(SP)+          ;SEE IF A RANDOM ^Q WAS INPUTED ;;REV-C
15024  066120  001766                          BEQ 10$                 ;BRANCH BACK IF SO - INPUT NOT WANTED ;;REV-C
15025  066122  000715                          BR 2$
15026  066124  104401          5$:             TYPE                    ;TYPE ?<CR><LF>*
15027  066126  015636                          QUES
15028  066130  062706  000002                  ADD     #2,SP
15029  066134  000664                          BR      1$
15030  066136  011637  065600          6$:     MOV     (SP),RCHAR      ;ECHO '-'
15031  066142  004737  065562                  JSR     PC,ECHAR
15032  066146  062766  000002  000004          ADD     #2,4(SP)        ;UPDATE RETURN POINTER
15033  066154  000713                          BR      7$
15034                                  ;
15035                                  ;SUBROUTINE TO FILL BYTE PRINT BUFFER. RETURNS TO CALL +2 WHEN DISPLAY REQUEST IS
15036                                  ;   COMPLETE (RLL=RUL). NORMAL RETURN TO CALL+4 WITH RLL=RLL +10 & PRINT BUFFER FILLED.
15037  066156  023737  002226  002230  FILLPB: CMP     RLL,RUL
15038  066164  001421                          BEQ     1$              ;   NORMAL RETURN TO CALL +4
15039  066166  013701  002226                  MOV     RLL,R1          ;SETUP POINTER TO DISPLAY LOCS
15040  066172  010137  002232                  MOV     R1,BAD          ;SAVE BUFFER ADDRESS FOR PRINTOUT
15041  066176  012137  003146                  MOV     (R1)+,PB0       ;TRANSFER 10 BYTES AT DISPLAY
15042  066202  012137  003150                  MOV     (R1)+,PB2       ;   LOC ADDRESS TO PRINT
15043  066206  012137  003152                  MOV     (R1)+,PB4       ;   BUFFER.
15044  066212  012137  003154                  MOV     (R1)+,PB6
15045  066216  062737  000010  002226          ADD     #10,RLL         ;UPDATE LOWER LIMIT DISPLAY POINTER
15046  066224  062716  000002                  ADD     #2,(SP)         ;UPDATE RETURN POINTER
15047  066230  000207                  1$:     RTS     PC
15048
15049                                          .EVEN
15050                                  ;
15051                                  ;SUBROUTINE TO TYPE FORMATED 'PRINTB' STATEMENTS
15052                                  ;
15053  066232                          FPRINT:
15054  066232  010537  002066                  MOV R5,FSAVR5           ;SAVE REGISTERS
```

```
15055  066236  010437  002070                    MOV R4,FSAVR4
15056  066242  010337  002072                    MOV R3,FSAVR3
15057  066246  010237  002074                    MOV R2,FSAVR2
15058  066252  010137  002076                    MOV R1,FSAVR1
15059  066256  012001                            MOV (R0)+,R1        ;SETUP R1 AS POINTER INTO FORMAT STATEMENT
15060  066260  112102                  1$:       MOVB (R1)+,R2       ;GET NEXT FORMAT BYTE
15061  066262  020227  000045                    CMP R2,#'%          ;IS BYTE = % ?
15062  066266  001774                            BEQ 1$              ;BRANCH IF YES
15063  066270  020227  000117                    CMP R2,#'O          ;IS BYTE = O ?  (OCTAL)
15064  066274  001426                            BEQ 2$              ;BRANCH IF YES
15065  066276  020227  000101                    CMP R2,#'A          ;IS BYTE = A ?  (ASCII)
15066  066302  001432                            BEQ 3$              ;BRANCH IF YES
15067  066304  020227  000116                    CMP R2,#'N          ;IS BYTE = N ?  (CRLF)
15068  066310  001443                            BEQ 4$              ;BRANCH IF YES
15069  066312  020227  000131                    CMP R2,#'Y          ;IS BYTE = Y ?  (BINARY)
15070  066316  001446                            BEQ 5$              ;BRANCH IF YES
15071  066320  020227  000104                    CMP R2,#'D          ;IS BYTE = D ?  (DECIMAL)
15072  066324  001452                            BEQ 6$              ;BRANCH IF YES
15073  066326  020227  000123                    CMP R2,#'S          ;IS BYTE = S ?  (SPACE)
15074  066332  001463                            BEQ 7$              ;BRANCH IF YES
15075  066334  020227  000000                    CMP R2,#0           ;IS BYTE = 0 ?  (END OF FORMAT STATEMENT)
15076  066340  001512                            BEQ 10$             ;BRANCH IF YES
15077  066342  020227  000102                    CMP R2,#'B          ;IS BYTE = B ?  (BYTE)
15078  066346  001524                            BEQ 11$             ;BRANCH IF YES
15079  066350  000743                            BR 1$               ;BYTE = NONE OF THE ABOVE - IGNORE IT.
15080
15081  066352  112102                  2$:       MOVB (R1)+,R2       ;SET R2 = COUNT OF # OF DIGITS TO PRINT
15082  066354  042702  177770                    BIC #177770,R2
15083  066360  012003                            MOV (R0)+,R3        ;SET R3 = WORD OF DIGITS TO PRINT
15084  066362  004737  066642                    JSR PC,POCT         ;CALL ROUTINE TO PRINT OCTAL DIGITS
15085  066366  000734                            BR 1$
15086  066370  112102                  3$:       MOVB (R1)+,R2       ;SET R2 = NEXT ASCII CHAR TO PRINT
15087  066372  022702  000045                    CMP #'%,R2          ;IS CHAR = %
15088  066376  001730                            BEQ 1$              ;BRANCH IF YES
15089  066400  022702  000000                    CMP #0,R2           ;END OF FORMAT BYTES?
15090  066404  001470                            BEQ 10$             ;BRANCH IF YES
15091  066406  110237  066744                    MOVB R2,TDIG        ;YES - PREPARE TO EXIT ROUTINE
15092  066412  104401  066744                    TYPE ,TDIG          ;CALL ROUTINE TO PRINT ASCII BYTE
15093  066416  000764                            BR 3$
15094  066420  012737  000200  066744  4$:       MOV #CRLF,TDIG      ;CALL ROUTINE TO PRINT CRLF
15095  066426  104401  066744                    TYPE ,TDIG
15096  066432  000712                            BR 1$
15097  066434  112102                  5$:       MOVB (R1)+,R2       ;SET R2 = COUNT OF # OF DIGITS TO PRINT
15098  066436  042702  177770                    BIC #177770,R2
15099  066442  012003                            MOV (R0)+,R3        ;SET R3 = WORD OF DIGITS TO PRINT
15100  066444  004737  066746                    JSR PC,PBIN         ;CALL ROUTINE TO PRINT BINARY DIGITS
15101  066450  000703                            BR 1$
15102  066452  112102                  6$:       MOVB (R1)+,R2       ;SET R2 = COUNT OF DIGITS TO PRINT
15103  066454  042702  177770                    BIC #177770,R2
15104  066460  020227  000006                    CMP R2,#6           ;IF REQUEST IS TO PRINT MORE THAN 5 DIGITS
15105  066464  103402                            BLO     61$         ;  PRINT 5 INSTEAD
15106  066466  012702  000005                    MOV #5,R2
15107  066472  012003                  61$:      MOV (R0)+,R3        ;SET R3 = WORD OF DIGITS TO PRINT
15108  066474  004737  067040                    JSR PC,PDEC         ;CALL ROUTINE TO CONVERT (R3) TO DECIMAL
```

```
15109  066500  000667                        BR 1$                   ;  AND PRINT DECIMAL DIGITS
15110  066502  112102              7$:       MOVB (R1)+,R2           ;GET MOST SIGN DIGIT OF 1 OR 2 DIGIT
15111                                         ;  COUNT OF # OF SPACES TO PRINT
15112  066504  042702  177770                BIC #177770,R2
15113  066510  121127  000045                CMPB (R1),#'%           ;IS NEXT BYTE = % ?
15114  066514  001415                        BEQ 12$
15115  066516  121127  000000                CMPB (R1),#0
15116  066522  001412                        BEQ 12$
15117  066524  006302                        ASL R2
15118  066526  006302                        ASL R2
15119  066530  006302                        ASL R2
15120  066532  112137  066742                MOVB (R1)+,OCNT
15121  066536  142737  000370  066742        BICB #370,OCNT
15122  066544  153702  066742                BISB OCNT,R2            ;GET LEAST SIGN DIGIT INTO R2
15123  066550  012737  000040  066744 12$:   MOV #' ,TDIG            ;PRINT A SPACE
15124  066556  104401  066744                TYPE ,TDIG
15125  066562  077206                        SOB R2,12$
15126  066564  000635                        BR 1$
15127  066566  011640              10$:      MOV (SP),-(R0)
15128  066570  010006                        MOV R0,SP
15129  066572  013705  002066                MOV FSAVR5,R5
15130  066576  013704  002070                MOV FSAVR4,R4
15131  066602  013703  002072                MOV FSAVR3,R3
15132  066606  013702  002074                MOV FSAVR2,R2
15133  066612  013701  002076                MOV FSAVR1,R1
15134  066616  000207                        RTS PC
15135
15136  066620  112102              11$:      MOVB (R1)+,R2           ;SET R2 = COUNT OF # OF DIGITS TO PRINT
15137  066622  042702  177770                BIC #177770,R2
15138  066626  012003                        MOV (R0)+,R3            ;SET R3 = BYTE TO PRINT
15139  066630  042703  177400                BIC #177400,R3
15140  066634  004737  066642                JSR PC,POCT
15141  066640  000607                        BR 1$
15142                                       ;
15143                                       ;SUBROUTINE TO CONVERT A BINARY # TO OCTAL (ASCII) AN TYPE IT
15144                                       ;ENTER WITH R2 = # OF OCTAL DIGITS TO TYPE
15145                                       ;            R3 = BINARY #
15146                                       ;
15147  066642  112737  000005  066742 POCT:  MOVB #5,OCNT            ;SET THE ITERATION COUNT
15148  066650  005402                        NEG R2
15149  066652  062702  000006                ADD #6,R2               ;SUBTRACT # OF DIGITS TO TYPE FROM MAX ALLOWED
15150  066656  110237  066743                MOVB R2,OMODE           ;SAVE IT FOR USE
15151  066662  005004                        CLR R4
15152  066664  006103              1$:       ROL R3                  ;ROTATE MSB INTO "C"
15153  066666  000404                        BR 3$
15154  066670  006103              2$:       ROL R3                  ;FORM THIS DIGIT
15155  066672  006103                        ROL R3
15156  066674  006103                        ROL R3
15157  066676  010304                        MOV R3,R4
15158  066700  006104              3$:       ROL R4                  ;GET LSB OF THIS DIGIT
15159  066702  105337  066743                DECB OMODE              ;TYPE THIS DIGIT
15160  066706  100010                        BPL 7$                  ;BRANCH IF NO
15161  066710  042704  177770                BIC #177770,R4          ;GET RID OF JUNK
15162  066714  052704  000060                BIS #'0,R4              ;MAKE THIS DIGIT ASCII
```

```
15163  066720  110437  066744                  MOVB R4,TDIG            ;SAVE FOR TYPING
15164  066724  104401  066744                  TYPE ,TDIG              ;TYPE THIS DIGIT
15165  066730  105337  066742          7$:     DECB OCNT               ;COUNT BY 1
15166  066734  002401                          BLT 6$                  ;BRANCH IF DONE
15167  066736  000754.                        BR 2$                   ;BRANCH IF MORE TO DO
15168  066740  000207                  6$:     RTS PC
15169
15170  066742      000                 OCNT:   .BYTE 0
15171  066743      000                 OMODE:  .BYTE 0
15172  066744      000                 TDIG:   .BYTE 0
15173  066745      000                         .BYTE 0
15174                                  ;
15175                                  ;SUBROUTINE TO CHANGE A BINARY # TO ASCII AND TYPE IT
15176                                  ;       ENTER WITH R2 = # OF BINARY DIGITS TO TYPE
15177                                  ;                    R3 = BINARY #
15178                                  ;
15179  066746  112737  000017  066742  PBIN:   MOVB #17,OCNT           ;SET THE ITERATION COUNT
15180  066754  005402                          NEG R2
15181  066756  062702  000020                  ADD #20,R2              ;SUBTRACT # OF DIGITS TO TYPE FROM MAX ALLOWED
15182  066762  110237  066743                  MOVB R2,OMODE           ;SAVE IT FOR USE
15183  066766  005004                          CLR R4                  ;CLEAR THE OUTPUT WORD
15184  066770  006103                  1$:     ROL R3
15185  066772  012704  000000                  MOV #0,R4
15186  066776  006104                          ROL R4                  ;GET BINARY DIGIT
15187  067000  105337  066743                  DECB OMODE              ;TYPE THIS DIGIT?
15188  067004  100010                          BPL 7$                  ;BRANCH IF NO
15189  067006  042704  177776                  BIC #177776,R4          ;GET RID OF JUNK
15190  067012  052704  000060                  BIS #'0,R4              ;MAKE THIS BIT ASCII
15191  067016  010437  066744                  MOV R4,TDIG             ;SAVE FOR TYPING
15192  067022  104401  066744                  TYPE ,TDIG              ;TYPE THIS DIGIT
15193  067026  105337  066742          7$:     DECB OCNT               ;COUNT BY 1
15194  067032  002401                          BLT 6$                  ;BRANCH IF DONE
15195  067034  000755                          BR 1$                   ;BRANCH IF MORE TO DO
15196  067036  000207                  6$:     RTS PC
15197
15198                                  ;
15199                                  ;SUBROUTINE TO CONVERT A BINARY # TO DECIMAL (ASCII) AND TYPE  DECIMAL DIGITS
15200                                  ;       ENTER WITH R3 = BINARY #
15201                                  ;                    R2 = # OF DECIMAL DIGITS TO TYPE
15202                                  ;
15203  067040  010146                  PDEC:   MOV R1,-(SP)            ;SAVE R1
15204  067042  010046                          MOV R0,-(SP)            ;SAVE R0
15205  067044  012700  000005                  MOV #5,R0
15206  067050  160200                          SUB R2,R0               ;R0 CONTAINS # OF DIGITS TO SKIP BEFORE PRINTING
15207  067052  005004                          CLR R4                  ;ZERO CONSTANTS TABLE INDEX
15208  067054  012705  067160                  MOV #DBLK,R5            ;SETUP THE OUTPUT POINTER
15209  067060  005002                  2$:     CLR R2                  ;CLEAR THE BCD #
15210  067062  016401  067150                  MOV DTBL(R4),R1         ;GET THE CONSTANT
15211  067066  160103                  3$:     SUB R1,R3               ;FORM THIS BCD DIGIT
15212  067070  103402                          BLO 4$                  ;BRANCH IF DONE
15213  067072  005202                          INC R2                  ;INCREASE THE BCD DIGIT BY 1
15214  067074  000774                          BR 3$
15215  067076  060103                  4$:     ADD R1,R3               ;ADD BACK THE CONSTANT
15216  067100  052702  000060          6$:     BIS #'0,R2              ;MAKE THE BCD DIGIT ASCII
```

```
15217  067104  005700                        TST R0                  ;PRINT THIS DIGIT?
15218  067106  001402                        BEQ 61$                 ;BRANCH IF YES
15219  067110  005300                        DEC R0                  ;DECREMENT SKIP COUNT
15220  067112  000401                        BR 62$
15221  067114  110225                61$:    MOVB R2,(R5)+           ;PUT THIS CHAR IN THE OUTPUT BUFFER
15222  067116  005724                62$:    TST (R4)+               ;JUST INCREMENTING
15223  067120  020427  000010                CMP R4,#10              ;CHECK THE TABLE INDEX
15224  067124  002755                        BLT 2$                  ;GO DO THE NEXT DIGIT
15225  067126  003002                        BGT 8$                  ;GO TO EXIT
15226  067130  010302                        MOV R3,R2               ;GET LSD
15227  067132  000762                        BR 6$                   ;GO CHANGE TO ASCII
15228  067134  105015                8$:     CLRB (R5)               ;SET THE TERMINATOR
15229  067136  104401  067160                TYPE ,DBLK              ;NOW TYPE THE #
15230  067142  012600                        MOV (SP)+,R0            ;RESTORE R0
15231  067144  012601                        MOV (SP)+,R1            ;RESTORE R1
15232  067146  000207                        RTS PC                  ;EXIT
15233  067150  023420                DTBL:   10000.
15234  067152  001750                        1000.
15235  067154  000144                        100.
15236  067156  000012                        10.
15237  067160  000004                DBLK:   .BLKW 4
15238                                 ;
15239                                 ;
15240                                 ;SUBROUTINE TO DISPLAY DECIMAL STRING SOURCES AND RESULTS IN
15241                                 ;  DECIMAL FORM.  STRINGS TO BE DISPLAYED ARE IDENTIFIED BY  THE
15242                                 ;  CONTENTS OF PZCODE AS FOLLOWS:
15243                                 ;
15244                                 ;       BIT 0 = 1       DISPLAY ZONED SOURCE STRING
15245                                 ;       BIT 1 = 1         ''     ''    SRC1     ''
15246                                 ;       BIT 2 = 1         ''     ''    SRC2     ''
15247                                 ;       BIT 3 = 1         ''     ''    DEST     ''  (DESC IN ER4,ER5)
15248                                 ;       BIT 4 = 1         ''     ''    DEST     ''  (DESC IN ER2,ER3)
15249                                 ;       BIT 5 = 1         ''     ''    DEST     ''  (DESC IN ER0,ER1)
15250                                 ;       BIT 8 = 1         ''   PACKED SOURCE   ''
15251                                 ;       BIT 9 = 1         ''     ''    SRC1     ''
15252                                 ;       BIT10 = 1         ''     ''    SRC2     ''
15253                                 ;       BIT11 = 1         ''     ''    DEST     ''  (DESC IN ER4,ER5)
15254                                 ;       BIT12 = 1         ''     ''    DEST     ''  (DESC IN ER2,ER3)
15255                                 ;       BIT13 = 1         ''     ''    DEST     ''  (DESC IN ER0,ER1)
15256                                 ;
15257                                 ;       NOTE: ALL SOURCE STRINGS MUST BE STORED IN THE INPUT
15258                                 ;       SOURCE BUFFER DESCRIBED BY THE DESCRIPTOR(S) AT
15259                                 ;       INSRC1 AND INSRC2.
15260                                 ;
15261                                 ;       IF THE DIVP BY 0 FLAG IS SET (EZDF) OR BIT 2 OF THE
15262                                 ;       SPECIAL HANDLING CODE IS SET (SPHAND) THEN THIS SUBROUTINE
15263                                 ;       RETURNS WITHOUT DISPLAYING ANY STRINGS.
15264                                 ;
15265                                 ;
15266  067170  005737  036316        PRNIB:  TST     EZDF            ;IS TEST CONDITION A 'DIVIDE BY ZERO'
15267  067174  001401                        BEQ 1$
15268  067176  000207                        RTS PC                  ;YES - EXIT WITHOUT DISPLAYING ANY BUFFER STRINGS
15269  067200  032737  000004  002144  1$:   BIT #4,SPHAND           ;IS SPECIAL HANDLING BIT 2 SET?
15270  067206  001401                        BEQ 2$
```

```
 15271  067210  000207                          RTS PC                  ;YES - EXIT WITHOUT DISPLAYING ANY BUFFER STRINGS.
 15272  067212  005737  002476          2$:     TST PZCODE              ;ARE ANY STRINGS TO BE DISPLAYED?
 15273  067216  001001                          BNE 3$
 15274  067220  000207                          RTS PC                  ;NO - EXIT WITHOUT DISPLAY.
 15275  067222  005037  026430          3$:     CLR EPAK
 15276  067226  032737  000001  002476        BIT #1,PZCODE           ;PRINT A ZONED SRC STRING?
 15277  067234  001402                          BEQ 4$
 15278  067236  004737  067410                  JSR PC,SN                       ;YES
 15279  067242  032737  000002  002476  4$:     BIT #2,PZCODE           ;PRINT A ZONED SRC1 STRING?
 15280  067250  001402                          BEQ 5$
 15281  067252  004737  067440                  JSR PC,S1N                      ;YES
 15282  067256  032737  000004  002476  5$:     BIT #4,PZCODE           ;PRINT A ZONED SRC2 STRING?
 15283  067264  001402                          BEQ 6$
 15284  067266  004737  067530                  JSR PC,S2N                      ;YES
 15285  067272  012737  177777  026430  6$:     MOV #177777,EPAK
 15286  067300  032737  000400  002476        BIT #400,PZCODE         ;PRINT A PACKED SOURCE STRING?
 15287  067306  001402                          BEQ 7$
 15288  067310  004737  067410                  JSR PC,SN                       ;YES
 15289  067314  032737  001000  002476  7$:     BIT #1000,PZCODE        ;PRINT A PACKED SRC1 STRING?
 15290  067322  001402                          BEQ 10$
 15291  067324  004737  067440                  JSR PC,S1N                      ;YES
 15292  067330  032737  002000  002476  10$:    BIT #2000,PZCODE        ;PRINT A PACKED SRC2 STRING?
 15293  067336  001402                          BEQ 11$
 15294  067340  004737  067530                  JSR PC,S2N                      ;YES
 15295  067344  032737  000070  002476  11$:    BIT #70,PZCODE          ;PRINT A ZONED DEST. STRING?
 15296  067352  001404                          BEQ 12$
 15297  067354  005037  026430                  CLR EPAK
 15298  067360  004737  067620                  JSR PC,DN                       ;YES
 15299  067364  032737  034000  002476  12$:    BIT #34000,PZCODE       ;PRINT A PACKED DEST. STRING?
 15300  067372  001405                          BEQ 13$
 15301  067374  012737  177777  026430          MOV #177777,EPAK
 15302  067402  004737  067620                  JSR PC,DN                       ;YES
 15303  067406  000207                13$:     RTS PC                  ;EXIT DECIMAL DISPLAY SUBROUTINE.
 15304
 15305
 15306  067410                        SN:      PRINTB #FORM22          ;PRINT 'SRC'
   (6)  067410  012746  014163                  MOV     #FORM22,-(SP)
   (3)  067414  010600                          MOV     SP,R0
   (4)  067416  004737  066232                  JSR PC,FPRINT
 15307  067422  013701  002504                  MOV INSRC1,R1           ;LOAD R1 WITH STRING LEN
 15308  067426  013700  002506                  MOV INSRC1+2,R0         ;LOAD R0 WITH STRING ADD
 15309  067432  004737  070006                  JSR PC,DECPRT           ;PRINT DECIMAL DIGIT STRING
 15310  067436  000207                          RTS PC
 15311  067440  013701  050164        S1N:     MOV TINST,R1
 15312  067444  042701  177700                  BIC #177700,R1
 15313  067450  020127  000052                  CMP R1,#52              ;IS INST = CMPN?
 15314  067454  001403                          BEQ 1$                  ;BRANCH IF YES
 15315  067456  020127  000072                  CMP R1,#72              ;IS INST = CMPP?
 15316  067462  001006                          BNE 2$                  ;BRANCH IF NO
 15317  067464                        1$:      PRINTB #FORM24          ;PRINT 'SRC2'
   (6)  067464  012746  014216                  MOV     #FORM24,-(SP)
   (3)  067470  010600                          MOV     SP,R0
   (4)  067472  004737  066232                  JSR PC,FPRINT
 15318  067476  000405                          BR 3$
```

```
15319  067500                          2$:     PRINTB #FORM23          ;PRINT 'SRC1'
  (6)  067500  012746  014200                  MOV     #FORM23,-(SP)
  (3)  067504  010600                          MOV     SP,R0
  (4)  067506  004737  066232                  JSR PC,FPRINT
15320  067512  013701  002504          3$:     MOV INSRC1,R1           ;LOAD R1 WITH STRING LEN
15321  067516  013700  002506                  MOV INSRC1+2,R0         ;LOAD R0 WITH STRING ADD
15322  067522  004737  070006                  JSR PC,DECPRT           ;PRINT DECIMAL DIGIT STRING
15323  067526  000207                          RTS PC
15324  067530  013701  050164          S2N:    MOV TINST,R1
15325  067534  042701  177700                  BIC #177700,R1
15326  067540  020127  000052                  CMP R1,#52              ;IS INST = CMPN?
15327  067544  001403                          BEQ 1$                  ;BRANCH IF YES
15328  067546  020127  000072                  CMP R1,#72              ;IS INST = CMPP?
15329  067552  001006                          BNE 2$                  ;BRANCH IF NO
15330  067554                          1$:     PRINTB #FORM23          ;PRINT 'SRC1'
  (6)  067554  012746  014200                  MOV     #FORM23,-(SP)
  (3)  067560  010600                          MOV     SP,R0
  (4)  067562  004737  066232                  JSR PC,FPRINT
15331  067566  000405                          BR 3$
15332  067570                          2$:     PRINTB #FORM24          ;PRINT 'SRC2'
  (6)  067570  012746  014216                  MOV     #FORM24,-(SP)
  (3)  067574  010600                          MOV     SP,R0
  (4)  067576  004737  066232                  JSR PC,FPRINT
15333  067602  013701  002510          3$:     MOV INSRC2,R1           ;LOAD R1 WITH STRING LENGTH
15334  067606  013700  002512                  MOV INSRC2+2,R0         ;LOAD R0 WITH STRING ADD
15335  067612  004737  070006                  JSR PC,DECPRT           ;PRINT DECIMAL DIGIT STRING
15336  067616  000207                          RTS PC
15337  067620                          DN:     PRINTB #FORM25          ;PRINT 'EM RESULT'
  (6)  067620  012746  014234                  MOV     #FORM25,-(SP)
  (3)  067624  010600                          MOV     SP,R0
  (4)  067626  004737  066232                  JSR PC,FPRINT
15338  067632  032737  020040  002476          BIT #20040,PZCODE       ;LOAD R1 WITH STRING LEN
15339  067640  001405                          BEQ 1$                  ;LOAD R0 WITH STRING ADDRESS
15340  067642  013701  003674                  MOV ER0,R1
15341  067646  013700  003676                  MOV ER1,R0
15342  067652  000415                          BR 4$
15343  067654  032737  010020  002476  1$:     BIT #10020,PZCODE
15344  067662  001405                          BEQ 2$
15345  067664  013701  003700                  MOV ER2,R1
15346  067670  013700  003702                  MOV ER3,R0
15347  067674  000404                          BR 4$
15348  067676  013701  003704          2$:     MOV ER4,R1
15349  067702  013700  003706                  MOV ER5,R0
15350  067706  004737  070006          4$:     JSR PC,DECPRT           ;PRINT DECIMAL DIGIT STRING
15351  067712                                  PRINTB #FORM26          ;PRINT 'ACT RESULT'
  (6)  067712  012746  014257                  MOV     #FORM26,-(SP)
  (3)  067716  010600                          MOV     SP,R0
  (4)  067720  004737  066232                  JSR PC,FPRINT
15352  067724  032737  020040  002476          BIT #20040,PZCODE       ;LOAD R1 WITH STRING LEN
15353  067732  001405                          BEQ 11$                 ;LOAD R0 WITH STRING ADDRESS
15354  067734  013701  002240                  MOV TTR0,R1
15355  067740  013700  002242                  MOV TTR1,R0
15356  067744  000415                          BR 44$
15357  067746  032737  010020  002476  11$:    BIT #10020,PZCODE
```

```
15358  067754  001405                          BEQ 22$
15359  067756  013701  002244                  MOV TTR2,R1
15360  067762  013700  002246                  MOV TTR3,R0
15361  067766  000404                          BR 44$
15362  067770  013701  002250          22$:    MOV TTR4,R1
15363  067774  013700  002252                  MOV TTR5,R0
15364  070000  004737  070006          44$:    JSR PC,DECPRT           ;PRINT DECIMAL DIGIT STRING
15365  070004  000207                          RTS PC
15366
15367                                  ;
15368                                  ;SUBROUTINE TO PRINT A DECIMAL STRING OF DIGITS; MSD FIRST ....
15369                                  ;       LEAST SIGNIFICANT DIGIT, SIGN.
15370                                  ;       INPUT:  EPAK=0 FOR ZONED STRING;177777 FOR PACKED
15371                                  ;               R0=STRING ADR
15372                                  ;               R1=STRING LEN
15373                                  ;
15374                                  ;       NOTE: ROUTINE PRINTS '0 +' FOR ZONED STRINGS OF
15375                                  ;       ZERO LENGTH (EXCEPT SEPARATE TYPE).
15376                                  ;
15377  070006  012737  177777  002310  DECPRT: MOV #177777,PRTSGN      ;SET PRINTING IN PROGRESS FLAG
15378  070014  010003                          MOV R0,R3               ;SAVE R0 IN R3
15379  070016  005037  025220                  CLR EODD
15380  070022  032701  000001                  BIT #1,R1               ;IS STRING ODD IN LENGTH
15381  070026  001403                          BEQ 1$
15382  070030  012737  177777  025220          MOV #177777,EODD        ;SET ODD INDICATOR
15383  070036  010137  025236          1$:     MOV R1,ELSD
15384  070042  110137  002104                  MOVB R1,NBLKS           ;DETERMINE # OF BLANK DIGITS TO PRINT
15385  070046  012702  000037                  MOV #37,R2
15386  070052  163702  002104                  SUB NBLKS,R2
15387  070056  001002                          BNE 11$
15388  070060  012702  000001                  MOV #1,R2
15389  070064                          11$:    PRINTB #FORM27          ;PRINT THE BLANKS
  (6)  070064  012746  014302                  MOV     #FORM27,-(SP)
  (3)  070070  010600                          MOV     SP,R0
  (4)  070072  004737  066232                  JSR PC,FPRINT
15390  070076  005302                          DEC R2
15391  070100  001371                          BNE 11$
15392  070102  105701                  3$:     TSTB R1                 ;STRING LENGTH = 0?
15393  070104  001017                          BNE 4$                  ;BRANCH IF NO
15394  070106  005737  026430                  TST EPAK                ;STRING PACKED?
15395  070112  001407                          BEQ 5$                  ;BRANCH IF NO
15396  070114  005201                          INC R1                  ;YES - SET LEN = 1
15397  070116  005237  025236                  INC ELSD
15398  070122  012737  177777  025220          MOV #177777,EODD
15399  070130  000405                          BR 4$
15400  070132  005002                  5$:     CLR R2                  ;ZONED - ZERO LENGTH
15401  070134  004537  070330                  JSR R5,CONVN            ;PRINT 0
15402  070140  070364                          DIGTBL
15403  070142  000413                          BR 12$                  ;EXIT
15404  070144  010300                  4$:     MOV R3,R0               ;RESTORE R0
15405  070146  105001                          CLRB R1
15406  070150  004737  021456          7$:     JSR PC,ESNK             ;GET NEXT DIGIT
15407  070154  004537  070330                  JSR R5,CONVN            ;CONVERT NIBBLE & PRINT HEX DIGIT
15408  070160  070364                          DIGTBL
```

```
15409  070162  105201                          INCB R1
15410  070164  120137  025236                  CMPB R1,ELSD
15411  070170  001367                          BNE 7$
15412  070172  004737  021456          12$:    JSR PC,ESNK             ;CALL ROUTINE TO FIND SIGN
15413                                                                  ;SIGN RETURNED IN ERSNEG (0=+,/=0=-)
15414                                                                  ;SIGN BYTE RETURNED IN 'SGNBYT'
15415  070176  005737  025170                  TST ERSNEG              ;IS SIGN NEGATIVE
15416  070202  001006                          BNE 2$                  ;BRANCH IF YES
15417  070204                                  PRINTB #FORM34          ;PRINT +
  (6)  070204  012746  014366                  MOV     #FORM34,-(SP)
  (3)  070210  010600                          MOV     SP,R0
  (4)  070212  004737  066232                  JSR PC,FPRINT
15418  070216  000405                          BR 33$
15419  070220                          2$:     PRINTB #FORM35          ;PRINT -
  (6)  070220  012746  014373                  MOV     #FORM35,-(SP)
  (3)  070224  010600                          MOV     SP,R0
  (4)  070226  004737  066232                  JSR PC,FPRINT
15420  070232                          33$:    PRINTB #FORM32          ;PRINT '  ('
  (6)  070232  012746  014342                  MOV     #FORM32,-(SP)
  (3)  070236  010600                          MOV     SP,R0
  (4)  070240  004737  066232                  JSR PC,FPRINT
15421  070244  013702  025274                  MOV SGNBYT,R2           ;GET HIGH NIBBLE OF SIGN BYTE
15422  070250  006202                          ASR R2
15423  070252  006202                          ASR R2
15424  070254  006202                          ASR R2
15425  070256  006202                          ASR R2
15426  070260  042702  177760                  BIC #177760,R2
15427  070264  004537  070330                  JSR R5,CONVN            ;CONVERT NIBBLE & PRINT HEX DIGIT
15428  070270  070364                          DIGTBL
15429  070272  113702  025274                  MOVB SGNBYT,R2          ;GET LOW NIBBLE OF SIGN BYTE
15430  070276  042702  177760                  BIC #177760,R2
15431  070302  004537  070330                  JSR R5,CONVN            ;CONVERT NIBBLE & PRINT HEX DIGIT
15432  070306  070364                          DIGTBL
15433  070310                                  PRINTB #FORM33          ;PRINT ')'
  (6)  070310  012746  014362                  MOV     #FORM33,-(SP)
  (3)  070314  010600                          MOV     SP,R0
  (4)  070316  004737  066232                  JSR PC,FPRINT
15434  070322  005037  002310          6$:     CLR PRISGN              ;YES - CLEAR PRINTING FLAG
15435  070326  000207                          RTS PC
15436
15437
15438                                   ;
15439                                   ;SUBROUTINE TO CONVERT NIBBLE (IN R2) TO A PRINTABLE CHARACTER
15440                                   ;       AND PRINT CHARACTER.
15441                                   ;       INPUT PARAMETER FOLLOWS CALL - CONVERSION TABLE ADDRESS
15442                                   ;
15443  070330                           CONVN:
15444  070330  010046                          MOV R0,-(SP)            ;SAVE R0
15445  070332  012500                          MOV (R5)+,R0            ;GET ADDRESS OF CONVERSION TABLE
15446  070334  060200                          ADD R2,R0               ;INDEX INTO TABLE
15447  070336  111037  070362                  MOVB (R0),ANIB+2        ;TRANSFER PRINT CHAR FROM TABLE TO ASCIZ PRINT STREAM.
15448  070342                                  PRINTB #ANIB            ;PRINT CONVERTED NIBBLE
  (6)  070342  012746  070360                  MOV     #ANIB,-(SP)
  (3)  070346  010600                          MOV     SP,R0
```

```
   (4)  070350  004737  066232                    JSR PC,FPRINT
15449   070354  012600                            MOV (SP)+,R0          ;RESTORE R0
15450   070356  000205                            RTS R5                ;EXIT
15451
15452   070360     045                 ANIB:      .BYTE   045           ;%
15453   070361     101                            .BYTE   101           ;A
15454   070362     000                            .BYTE   000           ;PRINT CHAR
15455   070363     000                            .BYTE   000           ;ZERO BYTE
15456
15457
15458   070364     060                 DIGTBL:    .BYTE   060           ;0
15459   070365     061                            .BYTE   061           ;1
15460   070366     062                            .BYTE   062           ;2
15461   070367     063                            .BYTE   063           ;3
15462   070370     064                            .BYTE   064           ;4
15463   070371     065                            .BYTE   065           ;5
15464   070372     066                            .BYTE   066           ;6
15465   070373     067                            .BYTE   067           ;7
15466   070374     070                            .BYTE   070           ;8
15467   070375     071                            .BYTE   071           ;9
15468   070376     101                            .BYTE   101           ;A
15469   070377     102                            .BYTE   102           ;B
15470   070400     103                            .BYTE   103           ;C
15471   070401     104                            .BYTE   104           ;D
15472   070402     105                            .BYTE   105           ;E
15473   070403     106                            .BYTE   106           ;F
15474                                        ;
15475                                        ;SUBROUTINE TO SEARCH FOR A MATCH BETWEEN ENTERED INST
15476                                        ;AND TABLED ASCII LIST OF CIS INSTRUCTIONS.
15477                                        ;
15478   070404  012701  004454               SFCI:      MOV #ASZINS,R1
15479   070410  005711                       1$:        TST (R1)              ;REACHED END OF TABLED ASCII LIST?
15480   070412  001434                                  BEQ NOMTCH            ;BRANCH IF YES
15481   070414  021137  002466                          CMP (R1),ACINST       ;DO 1ST TWO CHARS MATCH TABLED INST?
15482   070420  001403                                  BEQ 2$                ;BRANCH IF YES
15483   070422  062701  000010               11$:       ADD #10,R1            ;UPDATE TO NEXT TABLED INST
15484   070426  000770                                  BR 1$                 ;RETURN TO CONTINUE SEARCH
15485   070430  026137  000002  002470       2$:        CMP 2(R1),ACINST+2    ;DO 2ND GROUP OF 2 CHARS MATCH
15486   070436  001401                                  BEQ 3$                ;BRANCH IF YES
15487   070440  000770                                  BR 11$
15488   070442  026137  000004  002472       3$:        CMP 4(R1),ACINST+4    ;DO 3RD GROUP OF 2 CHARS MATCH
15489   070450  001364                                  BNE 11$               ;BRANCH IF NO
15490   070452  005737  001764                          TST RANDOM            ;RANDOM EXERCISE MODE?
15491   070456  001405                                  BEQ 4$                ;BRANCH IF NO
15492   070460  016100  000006                          MOV 6(R1),R0
15493   070464  011037  072776                          MOV (R0),IDUM         ;LOAD OCTAL CODING FOR CIS INST INTO DUMMY INPUT TABLE
15494   070470  000403                                  BR MTCH
15495   070472  016137  000006  073052       4$:        MOV 6(R1),INPTBL      ;MATCH FOUND - RETURN TO CALL + 4
15496                                                                         ;SAVE DESIRED INST INPUT TABLE ADDRESS
15497                                                                         ;IN INPTBL.
15498   070500  062716  000002               MTCH:      ADD #2,(SP)
15499   070504  000207                       NOMTCH:    RTS PC                ;NO MATCH - RETURN TO CALL + 2
15500
```

```
15502                                   ;
15503                                   ;SUBROUTINE TO ACCEPT ASCII CHARS (6MAX,LESS+CR) FROM TTY.
15504                                   ; STORES ASCII CHARS 2 PER WORD IN ACINST,ACINST+2, AND ACINST+4.
15505                                   ;
15506  070506  005037  002466          ACASZ:  CLR ACINST
15507  070512  005037  002470                  CLR ACINST+2
15508  070516  005037  002472                  CLR ACINST+4            ;CLEAR OUT STORAGE AREA
15509  070522  012701  002466                  MOV #ACINST,R1          ;SETUP REG POINTER TO STORAGE AREA
15510  070526  105777  111134          1$:     TSTB @TKS               ;WAIT FOR A CHAR
15511  070532  100375                          BPL 1$
15512  070534  117737  111152  065600        MOVB @TKB,RCHAR         ;READ AND SAVE CHAR
15513  070542  032737  000100  065600        BIT #100,RCHAR          ;CONVERT LOWER CASE TO UPPER
15514  070550  001403                        BEQ 3$                  ;  CASE LETTERS
15515  070552  042737  000040  065600        BIC #40,RCHAR
15516  070560  042737  177600  065600  3$:   BIC #^C177,RCHAR        ;GET RID OF JUNK IF ANY
15517  070566  022737  000021  065600        CMP #021,RCHAR          ;SEE IF A RANDOM ^Q WAS INPUTED         ;;REV-C
15518  070574  001754                        BEQ 1$                  ;BRANCH BACK IF SO - INPUT NOT WANTED   ;;REV-C
15519  070576  123727  065600  000015        CMPB RCHAR,#15          ;IS CHAR A CR?
15520  070604  001412                        BEQ 2$                  ;BRANCH IF YES
15521  070606  113721  065600                MOVB RCHAR,(R1)+        ;SAVE CHAR
15522  070612  004737  065562                JSR PC,ECHAR            ;ECHO 6TH CHAR
15523  070616  022701  002474                CMP #ACINST+6,R1        ;6 CHARS ENTERED?
15524  070622  001341                        BNE 1$                  ;BRANCH IF NO TO LISTEN FOR NEXT CHAR
15525  070624  112737  000015  065600        MOVB #15,RCHAR          ;ECHO A CR
15526  070632  004737  065562          2$:   JSR PC,ECHAR            ;ECHO CR
15527  070636  000207                        RTS PC
15528
15529                                   ;SUBROUTINE TO RECORD WHICH CONDITION CODE STATES ARE EXERCISED
```

```
15531                                   ;FOR EACH INSTRUCTION.
15532                                   ;
15533  070640                           RECCC:
15534  070640  013701  002302                  MOV OCTIC,R1             ;FORM POINTER INTO TABLE OF COND. CODE USAGE
15535  070644  006301                          ASL R1
15536  070646  062701  004022                  ADD #CCREC,R1
15537  070652  113737  003730  002041          MOVB ECCR,ZCCR+1
15538  070660  153711  003730                  BISB ECCR,(R1)           ;LOG CC '1' STATES EXERCISED
15539  070664  005137  002040                  COM ZCCR
15540  070670  042737  170377  002040          BIC #170377,ZCCR
15541  070676  053711  002040                  BIS ZCCR,(R1)            ;LOG CC '0' STATES EXERCISED
15542  070702  000207                          RTS PC
15543                                   ;POINTERS TO CIS INSTRUCTION ERROR MESSAEGE HEADER ROUTINE
15544                                   ;
15545  070704                           INEM:
15546  070704  000000                          .WORD   0
15547  070706  070774                          .WORD   YMOVC
15548  070710  071030                          .WORD   YMOVRC
15549  070712  071064                          .WORD   YMOVTC
15550  070714  071120                          .WORD   YLOCC
15551  070716  071154                          .WORD   YSKPC
15552  070720  071210                          .WORD   YSCANC
15553  070722  071244                          .WORD   YSPANC
15554  070724  071300                          .WORD   YCMPC
15555  070726  071334                          .WORD   YMATCHC
15556  070730  071370                          .WORD   YADDN
15557  070732  071432                          .WORD   YSUBN
15558  070734  071474                          .WORD   YCMPN
15559  070736  071536                          .WORD   YCVTNL
15560  070740  071600                          .WORD   YCVTPN
15561  070742  071642                          .WORD   YCVTNP
15562  070744  071704                          .WORD   YASHN
15563  070746  071746                          .WORD   YCVTLN
15564  070750  072010                          .WORD   YADDP
15565  070752  072052                          .WORD   YSUBP
15566  070754  072114                          .WORD   YCMPP
15567  070756  072156                          .WORD   YCVTPL
15568  070760  072220                          .WORD   YMULP
15569  070762  072262                          .WORD   YDIVP
15570  070764  072324                          .WORD   YASHP
15571  070766  072366                          .WORD   YCVTLP
15572  070770  072430                          .WORD   YL2D
15573  070772  072470                          .WORD   YL3D
15574                                   ;
15575                                   .SBTTL          ERROR MESSAGE HEADERS
15576                                   ;ERROR MESSAGE HEADERS
15577                                   ;
15578  070774                           YMOVC:
15579  070774                                   PRINTB  #AMOVC
  (6)  070774  012746  007444                   MOV     #AMOVC,-(SP)
  (3)  071000  010600                           MOV     SP,R0
  (4)  071002  004737  066232                   JSR PC,FPRINT
15580  071006  004737  072530                   JSR     PC,PRNTIQ       ;PRINT TEST #
15581  071012  000405                           BR 1$                   ;CNTL-T RETURN
```

```
15582  071014                                   PRINTB  #FORM1              ;NORMAL RETURN
  (6)  071014  012746  010012                   MOV     #FORM1,-(SP)
  (3)  071020  010600                           MOV     SP,R0
  (4)  071022  004737  066232                   JSR PC,FPRINT
15583  071026  000207                    1$:     RTS     PC
15584  071030                            YMOVRC:
15585  071030                                   PRINTB  #AMOVRC
  (6)  071030  012746  007454                   MOV     #AMOVRC,-(SP)
  (3)  071034  010600                           MOV     SP,R0
  (4)  071036  004737  066232                   JSR PC,FPRINT
15586  071042  004737  072530                   JSR     PC,PRNTIQ           ;PRINT TEST #
15587  071046  000405                           BR 1$
15588  071050                                   PRINTB  #FORM1
  (6)  071050  012746  010012                   MOV     #FORM1,-(SP)
  (3)  071054  010600                           MOV     SP,R0
  (4)  071056  004737  066232                   JSR PC,FPRINT
15589  071062  000207                    1$:     RTS     PC
15590  071064                            YMOVTC:
15591  071064                                   PRINTB  #AMOVTC
  (6)  071064  012746  007465                   MOV     #AMOVTC,-(SP)
  (3)  071070  010600                           MOV     SP,R0
  (4)  071072  004737  066232                   JSR PC,FPRINT
15592  071076  004737  072530                   JSR     PC,PRNTIQ           ;PRINT TEST #
15593  071102  000405                           BR 1$
15594  071104                                   PRINTB  #FORM2
  (6)  071104  012746  010072                   MOV     #FORM2,-(SP)
  (3)  071110  010600                           MOV     SP,R0
  (4)  071112  004737  066232                   JSR PC,FPRINT
15595  071116  000207                    1$:     RTS     PC
15596  071120                            YLOCC:
15597  071120                                   PRINTB  #ALOCC
  (6)  071120  012746  007476                   MOV     #ALOCC,-(SP)
  (3)  071124  010600                           MOV     SP,R0
  (4)  071126  004737  066232                   JSR PC,FPRINT
15598  071132  004737  072530                   JSR     PC,PRNTIQ           ;PRINT TEST #
15599  071136  000405                           BR 1$
15600  071140                                   PRINTB  #FORM3
  (6)  071140  012746  010160                   MOV     #FORM3,-(SP)
  (3)  071144  010600                           MOV     SP,R0
  (4)  071146  004737  066232                   JSR PC,FPRINT
15601  071152  000207                    1$:     RTS     PC
15602  071154                            YSKPC:
15603  071154                                   PRINTB  #ASKPC
  (6)  071154  012746  007506                   MOV     #ASKPC,-(SP)
  (3)  071160  010600                           MOV     SP,R0
  (4)  071162  004737  066232                   JSR PC,FPRINT
15604  071166  004737  072530                   JSR     PC,PRNTIQ           ;PRINT TEST #
15605  071172  000405                           BR 1$
15606  071174                                   PRINTB  #FORM3
  (6)  071174  012746  010160                   MOV     #FORM3,-(SP)
  (3)  071200  010600                           MOV     SP,R0
  (4)  071202  004737  066232                   JSR PC,FPRINT
15607  071206  000207                    1$:     RTS     PC
15608  071210                            YSCANC:
```

```
15609  071210                                   PRINTB  #ASCANC
  (6)  071210  012746  007516                   MOV     #ASCANC,-(SP)
  (3)  071214  010600                           MOV     SP,R0
  (4)  071216  004737  066232                   JSR PC,FPRINT
15610  071222  004737  072530                   JSR     PC,PRNTIQ       ;PRINT TEST #
15611  071226  000405                           BR 1$
15612  071230                                   PRINTB  #FORM4
  (6)  071230  012746  010226                   MOV     #FORM4,-(SP)
  (3)  071234  010600                           MOV     SP,R0
  (4)  071236  004737  066232                   JSR PC,FPRINT
15613  071242  000207                   1$:     RTS     PC
15614  071244                           YSPANC:
15615  071244                                   PRINTB  #ASPANC
  (6)  071244  012746  007527                   MOV     #ASPANC,-(SP)
  (3)  071250  010600                           MOV     SP,R0
  (4)  071252  004737  066232                   JSR PC,FPRINT
15616  071256  004737  072530                   JSR     PC,PRNTIQ       ;PRINT TEST #
15617  071262  000405                           BR 1$
15618  071264                                   PRINTB  #FORM4
  (6)  071264  012746  010226                   MOV     #FORM4,-(SP)
  (3)  071270  010600                           MOV     SP,R0
  (4)  071272  004737  066232                   JSR PC,FPRINT
15619  071276  000207                   1$:     RTS     PC
15620  071300                           YCMPC:
15621  071300                                   PRINTB  #ACMPC
  (6)  071300  012746  007540                   MOV     #ACMPC,-(SP)
  (3)  071304  010600                           MOV     SP,R0
  (4)  071306  004737  066232                   JSR PC,FPRINT
15622  071312  004737  072530                   JSR     PC,PRNTIQ       ;PRINT TEST #
15623  071316  000405                           BR 1$
15624  071320                                   PRINTB  #FORM5
  (6)  071320  012746  010302                   MOV     #FORM5,-(SP)
  (3)  071324  010600                           MOV     SP,R0
  (4)  071326  004737  066232                   JSR PC,FPRINT
15625  071332  000207                   1$:     RTS     PC
15626  071334                           YMATCHC:
15627  071334                                   PRINTB  #AMATCHC
  (6)  071334  012746  007550                   MOV     #AMATCHC,-(SP)
  (3)  071340  010600                           MOV     SP,R0
  (4)  071342  004737  066232                   JSR PC,FPRINT
15628  071346  004737  072530                   JSR     PC,PRNTIQ       ;PRINT TEST #
15629  071352  000405                           BR 1$
15630  071354                                   PRINTB  #FORM6
  (6)  071354  012746  010366                   MOV     #FORM6,-(SP)
  (3)  071360  010600                           MOV     SP,R0
  (4)  071362  004737  066232                   JSR PC,FPRINT
15631  071366  000207                   1$:     RTS     PC
15632  071370                           YADDN:
15633  071370                                   PRINTB  #AADDN
  (6)  071370  012746  007560                   MOV     #AADDN,-(SP)
  (3)  071374  010600                           MOV     SP,R0
  (4)  071376  004737  066232                   JSR PC,FPRINT
15634  071402  004737  072530                   JSR     PC,PRNTIQ       ;PRINT TEST #
15635  071406  000410                           BR 1$
```

```
15636  071410                                          PRINTB  #FORM7
  (6)  071410  012746  010440                          MOV     #FORM7,-(SP)
  (3)  071414  010600                                  MOV     SP,R0
  (4)  071416  004737  066232                          JSR PC,FPRINT
15637  071422  012737  000016  002476                  MOV #000016,PZCODE      ;SET PRINTCODE TO DISPLAY ZONED SRC1,SRC2,DST
15638  071430  000207                        1$:       RTS     PC
15639  071432                                YSUBN:
15640  071432                                          PRINTB  #ASUBN
  (6)  071432  012746  007570                          MOV     #ASUBN,-(SP)
  (3)  071436  010600                                  MOV     SP,R0
  (4)  071440  004737  066232                          JSR PC,FPRINT
15641  071444  004737  072530                          JSR     PC,PRNTIQ       ;PRINT TEST #
15642  071450  000410                                  BR 1$
15643  071452                                          PRINTB  #FORM7
  (6)  071452  012746  010440                          MOV     #FORM7,-(SP)
  (3)  071456  010600                                  MOV     SP,R0
  (4)  071460  004737  066232                          JSR PC,FPRINT
15644  071464  012737  000016  002476                  MOV #000016,PZCODE      ;SET PRINTCODE TO DISPLAY ZONED SRC1,SRC2,DST.
15645  071472  000207                        1$:       RTS     PC
15646  071474                                YCMPN:
15647  071474                                          PRINTB  #ACMPN
  (6)  071474  012746  007600                          MOV     #ACMPN,-(SP)
  (3)  071500  010600                                  MOV     SP,R0
  (4)  071502  004737  066232                          JSR PC,FPRINT
15648  071506  004737  072530                          JSR     PC,PRNTIQ       ;PRINT TEST #
15649  071512  000410                                  BR 1$
15650  071514                                          PRINTB  #FORM8
  (6)  071514  012746  010534                          MOV     #FORM8,-(SP)
  (3)  071520  010600                                  MOV     SP,R0
  (4)  071522  004737  066232                          JSR PC,FPRINT
15651  071526  012737  000006  002476                  MOV #000006,PZCODE      ;SET PRINTCODE TO DISPLAY ZONED SRC1,SRC2.
15652  071534  000207                        1$:       RTS     PC
15653  071536                                YCVTNL:
15654  071536                                          PRINTB  #ACVTNL
  (6)  071536  012746  007610                          MOV     #ACVTNL,-(SP)
  (3)  071542  010600                                  MOV     SP,R0
  (4)  071544  004737  066232                          JSR PC,FPRINT
15655  071550  004737  072530                          JSR     PC,PRNTIQ       ;PRINT TEST #
15656  071554  000410                                  BR 1$
15657  071556                                          PRINTB  #FORM9
  (6)  071556  012746  010612                          MOV     #FORM9,-(SP)
  (3)  071562  010600                                  MOV     SP,R0
  (4)  071564  004737  066232                          JSR PC,FPRINT
15658  071570  012737  000001  002476                  MOV #000001,PZCODE      ;SET PRINTCODE TO DISPLAY ZONED SRC.
15659  071576  000207                        1$:       RTS     PC
15660  071600                                YCVTPN:
15661  071600                                          PRINTB  #ACVTPN
  (6)  071600  012746  007621                          MOV     #ACVTPN,-(SP)
  (3)  071604  010600                                  MOV     SP,R0
  (4)  071606  004737  066232                          JSR PC,FPRINT
15662  071612  004737  072530                          JSR     PC,PRNTIQ       ;PRINT TEST #
15663  071616  000410                                  BR 1$
15664  071620                                          PRINTB  #FORM10
  (6)  071620  012746  010666                          MOV     #FORM10,-(SP)
```

```
   (3)  071624  010600                          MOV     SP,R0
   (4)  071626  004737  066232                  JSR PC,FPRINT
15665   071632  012737  000420  002476          MOV #000420,PZCODE      ;SET PRINTCODE TO DISPLAY PACKED SRC AND ZONED DST.
15666   071640  000207                  1$:     RTS     PC
15667   071642                          YCVTNP:
15668   071642                          PRINTB  #ACVTNP
   (6)  071642  012746  007632                  MOV     #ACVTNP,-(SP)
   (3)  071646  010600                          MOV     SP,R0
   (4)  071650  004737  066232                  JSR PC,FPRINT
15669   071654  004737  072530                  JSR     PC,PRNTIQ       ;PRINT TEST #
15670   071660  000410                          BR 1$
15671   071662                          PRINTB  #FORM10
   (6)  071662  012746  010666                  MOV     #FORM10,-(SP)
   (3)  071666  010600                          MOV     SP,R0
   (4)  071670  004737  066232                  JSR PC,FPRINT
15672   071674  012737  010001  002476          MOV #010001,PZCODE      ;SET PRINTCODE TO DSIPLAY ZONED SRC AND PACKED DST.
15673   071702  000207                  1$:     RTS     PC
15674   071704                          YASHN:
15675   071704                          PRINTB  #AASHN
   (6)  071704  012746  007643                  MOV     #AASHN,-(SP)
   (3)  071710  010600                          MOV     SP,R0
   (4)  071712  004737  066232                  JSR PC,FPRINT
15676   071716  004737  072530                  JSR     PC,PRNTIQ       ;PRINT TEST #
15677   071722  000410                          BR 1$
15678   071724                          PRINTB  #FORM11
   (6)  071724  012746  010740                  MOV     #FORM11,-(SP)
   (3)  071730  010600                          MOV     SP,R0
   (4)  071732  004737  066232                  JSR PC,FPRINT
15679   071736  012737  000021  002476          MOV #000021,PZCODE      ;SET PRINTCODE TO DISPLAY ZONED SRC,DST.
15680   071744  000207                  1$:     RTS     PC
15681   071746                          YCVTLN:
15682   071746                          PRINTB  #ACVTLN
   (6)  071746  012746  007653                  MOV     #ACVTLN,-(SP)
   (3)  071752  010600                          MOV     SP,R0
   (4)  071754  004737  066232                  JSR PC,FPRINT
15683   071760  004737  072530                  JSR     PC,PRNTIQ       ;PRINT TEST #
15684   071764  000410                          BR 1$
15685   071766                          PRINTB  #FORM12
   (6)  071766  012746  011022                  MOV     #FORM12,-(SP)
   (3)  071772  010600                          MOV     SP,R0
   (4)  071774  004737  066232                  JSR PC,FPRINT
15686   072000  012737  000040  002476          MOV #000040,PZCODE      ;SET PRINTCODE TO DISPLAY ZONED DST.
15687   072006  000207                  1$:     RTS     PC
15688   072010                          YADDP:
15689   072010                          PRINTB  #AADDP
   (6)  072010  012746  007664                  MOV     #AADDP,-(SP)
   (3)  072014  010600                          MOV     SP,R0
   (4)  072016  004737  066232                  JSR PC,FPRINT
15690   072022  004737  072530                  JSR     PC,PRNTIQ       ;PRINT TEST #
15691   072026  000410                          BR 1$
15692   072030                          PRINTB  #FORM7
   (6)  072030  012746  010440                  MOV     #FORM7,-(SP)
   (3)  072034  010600                          MOV     SP,R0
   (4)  072036  004737  066232                  JSR PC,FPRINT
```

```
15693  072042  012737  007000  002476          MOV #007000,PZCODE      ;SET PRINTCODE TO DISPLAY PACKED SRC1,SRC2, AND DST.
15694  072050  000207                  1$:     RTS     PC
15695  072052                          YSUBP:
15696  072052                                  PRINTB  #ASUBP
  (6)  072052  012746  007674                  MOV     #ASUBP,-(SP)
  (3)  072056  010600                          MOV     SP,R0
  (4)  072060  004737  066232                  JSR PC,FPRINT
15697  072064  004737  072530                  JSR     PC,PRNTIQ       ;PRINT TEST #
15698  072070  000410                          BR 1$
15699  072072                                  PRINTB  #FORM7
  (6)  072072  012746  010440                  MOV     #FORM7,-(SP)
  (3)  072076  010600                          MOV     SP,R0
  (4)  072100  004737  066232                  JSR PC,FPRINT
15700  072104  012737  007000  002476          MOV #007000,PZCODE      ;SET PRINTCODE TO DISPLAY PACKED SRC1,SRC2,AND DST.
15701  072112  000207                  1$:     RTS     PC
15702  072114                          YCMPP:
15703  072114                                  PRINTB  #ACMPP
  (6)  072114  012746  007704                  MOV     #ACMPP,-(SP)
  (3)  072120  010600                          MOV     SP,R0
  (4)  072122  004737  066232                  JSR PC,FPRINT
15704  072126  004737  072530                  JSR     PC,PRNTIQ       ;PRINT TEST #
15705  072132  000410                          BR 1$
15706  072134                                  PRINTB  #FORM8
  (6)  072134  012746  010534                  MOV     #FORM8,-(SP)
  (3)  072140  010600                          MOV     SP,R0
  (4)  072142  004737  066232                  JSR PC,FPRINT
15707  072146  012737  003000  002476          MOV #003000,PZCODE      ;SET PRINTCODE TO DISPLAY PACKED SRC1, AND SRC2.
15708  072154  000207                  1$:     RTS     PC
15709  072156                          YCVTPL:
15710  072156                                  PRINTB  #ACVTPL
  (6)  072156  012746  007714                  MOV     #ACVTPL,-(SP)
  (3)  072162  010600                          MOV     SP,R0
  (4)  072164  004737  066232                  JSR PC,FPRINT
15711  072170  004737  072530                  JSR     PC,PRNTIQ       ;PRINT TEST #
15712  072174  000410                          BR 1$
15713  072176                                  PRINTB  #FORM9
  (6)  072176  012746  010612                  MOV     #FORM9,-(SP)
  (3)  072202  010600                          MOV     SP,R0
  (4)  072204  004737  066232                  JSR PC,FPRINT
15714  072210  012737  000400  002476          MOV #000400,PZCODE      ;SET PRINTCODE TO DISPLAY PACKED SRC.
15715  072216  000207                  1$:     RTS     PC
15716  072220                          YMULP:
15717  072220                                  PRINTB  #AMULP
  (6)  072220  012746  007725                  MOV     #AMULP,-(SP)
  (3)  072224  010600                          MOV     SP,R0
  (4)  072226  004737  066232                  JSR PC,FPRINT
15718  072232  004737  072530                  JSR     PC,PRNTIQ       ;PRINT TEST #
15719  072236  000410                          BR 1$
15720  072240                                  PRINTB  #FORM7
  (6)  072240  012746  010440                  MOV     #FORM7,-(SP)
  (3)  072244  010600                          MOV     SP,R0
  (4)  072246  004737  066232                  JSR PC,FPRINT
15721  072252  012737  007000  002476          MOV #007000,PZCODE      ;SET PRINTCODE TO DISPLAY PACKED SRC1,SRC2, AND DST.
15722  072260  000207                  1$:     RTS     PC
```

```
15723  072262                          YDIVP:
15724  072262                                  PRINTB  #ADIVP
  (6)  072262  012746  007735                  MOV     #ADIVP,-(SP)
  (3)  072266  010600                          MOV     SP,R0
  (4)  072270  004737  066232                  JSR PC,FPRINT
15725  072274  004737  072530                  JSR     PC,PRNTIQ       ;PRINT TEST #
15726  072300  000410                          BR 1$
15727  072302                                  PRINTB  #FORM7
  (6)  072302  012746  010440                  MOV     #FORM7,-(SP)
  (3)  072306  010600                          MOV     SP,R0
  (4)  072310  004737  066232                  JSR PC,FPRINT
15728  072314  012737  007000  002476          MOV #007000,PZCODE      ;SET PRINTCODE TO DISPLAY PACKED SRC1,SRC2, AND DST.
15729  072322  000207                  1$:     RTS     PC
15730  072324                          YASHP:
15731  072324                                  PRINTB  #AASHP
  (6)  072324  012746  007745                  MOV     #AASHP,-(SP)
  (3)  072330  010600                          MOV     SP,R0
  (4)  072332  004737  066232                  JSR PC,FPRINT
15732  072336  004737  072530                  JSR     PC,PRNTIQ       ;PRINT TEST #
15733  072342  000410                          BR 1$
15734  072344                                  PRINTB  #FORM11
  (6)  072344  012746  010740                  MOV     #FORM11,-(SP)
  (3)  072350  010600                          MOV     SP,R0
  (4)  072352  004737  066232                  JSR PC,FPRINT
15735  072356  012737  010400  002476          MOV #010400,PZCODE      ;SET PRINTCODE TO DISPLAY PACKED SRC,DST.
15736  072364  000207                  1$:     RTS     PC
15737  072366                          YCVTLP:
15738  072366                                  PRINTB  #ACVTLP
  (6)  072366  012746  007755                  MOV     #ACVTLP,-(SP)
  (3)  072372  010600                          MOV     SP,R0
  (4)  072374  004737  066232                  JSR PC,FPRINT
15739  072400  004737  072530                  JSR     PC,PRNTIQ       ;PRINT TEST #
15740  072404  000410                          BR 1$
15741  072406                                  PRINTB  #FORM12
  (6)  072406  012746  011022                  MOV     #FORM12,-(SP)
  (3)  072412  010600                          MOV     SP,R0
  (4)  072414  004737  066232                  JSR PC,FPRINT
15742  072420  012737  020000  002476          MOV #020000,PZCODE      ;SET PRINTCODE TO DISPLAY PACKED DST.
15743  072426  000207                  1$:     RTS     PC
15744  072430                          YL2D:
15745  072430                                  PRINTB #AL2D,TINST
  (7)  072430  013746  050164                  MOV     TINST,-(SP)
  (6)  072434  012746  007766                  MOV     #AL2D,-(SP)
  (3)  072440  010600                          MOV     SP,R0
  (4)  072442  004737  066232                  JSR PC,FPRINT
15746  072446  004737  072530                  JSR PC,PRNTIQ
15747  072452  000405                          BR 1$
15748  072454                                  PRINTB  #FORM41
  (6)  072454  012746  014733                  MOV     #FORM41,-(SP)
  (3)  072460  010600                          MOV     SP,R0
  (4)  072462  004737  066232                  JSR PC,FPRINT
15749  072466  000207                  1$:     RTS PC
15750  072470                          YL3D:
15751  072470                                  PRINTB #AL3D,TINST
```

```
   (7)  072470  013746  050164                    MOV     TINST,-(SP)
   (6)  072474  012746  010000                    MOV     #AL3D,-(SP)
   (3)  072500  010600                            MOV     SP,R0
   (4)  072502  004737  066232                    JSR PC,FPRINT
 15752  072506  004737  072530                    JSR PC,PRNTIQ
 15753  072512  000405                            BR 1$
 15754  072514                                    PRINTB  #FORM41
   (6)  072514  012746  014733                    MOV     #FORM41,-(SP)
   (3)  072520  010600                            MOV     SP,R0
   (4)  072522  004737  066232                    JSR PC,FPRINT
 15755  072526  000207                  1$:       RTS PC
 15756                                            ;
 15757                                            ;
 15758                                            ;SUBROUTINE TO PRINT CURRENT TEST # (TOTTC)
 15759                                            ;
 15760  072530  032737  000100  050164  PRNTIQ: BIT #100,TINST          ;SUBROUTINE TO PRINT I ON END OF IN-LINE OPCODE
 15761                                            ; NEUMONIC AND TEST NUMBER.
 15762                                            ;IS OPCODE UNDER TEST AN IN-LINE TYPE?
 15763  072536  001405                            BEQ 1$                ;BRANCH IF NO
 15764  072540                                    PRINTB  #FORM31       ;PRINT  I
   (6)  072540  012746  014336                    MOV     #FORM31,-(SP)
   (3)  072544  010600                            MOV     SP,R0
   (4)  072546  004737  066232                    JSR PC,FPRINT
 15765  072552                  1$:       PRINTB  #FORM30,TOTTCH,TOTTC  ;PRINT TEST #
   (8)  072552  013746  001420                    MOV     TOTTC,-(SP)
   (7)  072556  013746  001416                    MOV     TOTTCH,-(SP)
   (6)  072562  012746  014306                    MOV     #FORM30,-(SP)
   (3)  072566  010600                            MOV     SP,R0
   (4)  072570  004737  066232                    JSR PC,FPRINT
 15766  072574  005737  001766                    TST CTACT             ;CNTL-T REQUEST ACTIVE?
 15767  072600  001066                            BNE 3$                ;BRANCH IF YES
 15768  072602                                    PRINTB #FORM40,INTCT,REGSET   ;PRINT INTERRUPT COUNT AND REG SET
   (8)  072602  013746  002056                    MOV     REGSET,-(SP)
   (7)  072606  013746  002552                    MOV     INTCT,-(SP)
   (6)  072612  012746  014653                    MOV     #FORM40,-(SP)
   (3)  072616  010600                            MOV     SP,R0
   (4)  072620  004737  066232                    JSR PC,FPRINT
 15769  072624  062716  000002                    ADD #2,(SP)
 15770  072630  005737  002164                    TST MODE              ;FORM ASCII MODE CHARACTER
 15771  072634  001004                            BNE 4$
 15772  072636  112737  000113  066744            MOVB #113,TDIG        ;KERNEL MODE (K)
 15773  072644  000413                            BR 10$
 15774  072646  022737  000001  002164  4$:       CMP #1,MODE
 15775  072654  001004                            BNE 5$
 15776  072656  112737  000123  066744            MOVB #123,TDIG        ;SUPERVISOR MODE (S)
 15777  072664  000403                            BR 10$
 15778  072666  112737  000125  066744  5$:       MOVB #125,TDIG        ;USER MODE (U)
 15779  072674  104401                  10$:      TYPE
 15780  072676  066744                            TDIG
 15781  072700                                    PRINTB #FRM40A        ;PRINT D EN
   (6)  072700  012746  014721                    MOV     #FRM40A,-(SP)
   (3)  072704  010600                            MOV     SP,R0
   (4)  072706  004737  066232                    JSR PC,FPRINT
 15782  072712  005737  002166                    TST DEN               ;PRINT Y OR N
```

```
15783  072716  001004                        BNE 6$
15784  072720  112737  000116  066744        MOVB #116,TDIG
15785  072726  000403                        BR 11$
15786  072730  112737  000131  066744  6$:   MOVB #131,TDIG
15787  072736  104401                  11$:  TYPE
15788  072740  066744                        TDIG
15789  072742                                PRINTB #FORM21          ;PRINT CRLF
  (6)  072742  012746  014160                MOV     #FORM21,-(SP)
  (3)  072746  010600                        MOV     SP,R0
  (4)  072750  004737  066232                JSR PC,FPRINT
15790  072754  000405                        BR 2$
15791  072756                          3$:   PRINTB #FORM21          ;PRINT CRLF
  (6)  072756  012746  014160                MOV     #FORM21,-(SP)
  (3)  072762  010600                        MOV     SP,R0
  (4)  072764  004737  066232                JSR PC,FPRINT
15792  072770  005037  001766          2$:   CLR CTACT               ;CLEAR CNTL-T FLAG
15793  072774  000207                        RTS PC
15794
15795
15796                                        .EVEN
15797
15798
```

```
15800
15801                                   .SBTTL  DUMMY INPUT TABLE (FOR RANDOM MODE)
15802                                   ;DUMMY INPUT TABLE - USED ONLY IN RANDOM EXERCISE MODE
15803                                   ;
15804  072776  000000                  IDUM:   .WORD   0               ;INST
15805  073000  000000                          .WORD   0               ;TYPE = 0
15806  073002  000000                          .WORD   0               ;IP1
15807  073004  000000                          .WORD   0               ;IP2
15808  073006  000000                          .WORD   0               ;IP3
15809  073010  000000                          .WORD   0               ;IP4
15810  073012  000000                          .WORD   0               ;IP5
15811  073014  000000                          .WORD   0               ;IP6
15812  073016  000000                          .WORD   0               ;IP7
15813  073020  000000                          .WORD   0               ;IP10
15814  073022  000000                          .WORD   0               ;IP11
15815  073024  000000                          .WORD   0               ;IP12
15816  073026  000000                          .WORD   0               ;IP13
15817  073030  000000                          .WORD   0               ;IP14
15818  073032  000000                          .WORD   0               ;IP15
15819  073034  000000                          .WORD   0               ;IP16
15820  073036  000000                          .WORD   0               ;IP17
15821  073040  000000                          .WORD   0               ;IP20
15822  073042  000000                          .WORD   0               ;IP21
15823  073044  000000                          .WORD   0               ;IP22
15824  073046  000000                          .WORD   0               ;IP23
15825  073050  000000                  IDUME:  .WORD   0               ;IP24
15826
```

```
 15828
 15829                                  .SBTTL  CIS INST INPUT TABLES
 15830                                  ;INPUT TABLES
 15831                                  ;
 15832  073052  000000                  INPTBL: .WORD 0
 15833                                  ;
```

```
15835                                   .SBTTL          L2D TABLES
15836                                   ;
15837                                   ;ENTRY 0.1 - INSTRUCTION UNDER TEST = L2DR
15838                                   ;
15839  073054  000032                   IL2D:   .WORD 32                ;INST=L2DR; NOTE:R IS CALCULATED USING IP7.
15840  073056  000003                           .WORD 3                 ;TYPE = 1(BIT 0);11/44 QV TABLE(BIT 1=1)
15841  073060  110450                           .WORD T53               ;IP1 - R0 PATTERN
15842  073062  110460                           .WORD T54               ;IP2 - R1 PATTERN
15843  073064  110470                           .WORD T55               ;IP3 - R2 PATTERN
15844  073066  110500                           .WORD T56               ;IP4 - R3 PATTERN
15845  073070  110510                           .WORD T57               ;IP5 - R4 PATTERN
15846  073072  110520                           .WORD T60               ;IP6 - R5 PATTERN
15847  073074  110530                           .WORD T61               ;IP7 - DESC ADDRESS
15848  073076  000000                           .WORD 0                 ;IP10
15849  073100  000000                           .WORD 0                 ;IP11
15850  073102  000000                           .WORD 0                 ;IP12
15851  073104  000000                           .WORD 0                 ;IP13
15852  073106  000000                           .WORD 0                 ;IP14
15853  073110  000000                           .WORD 0                 ;IP15
15854  073112  000000                           .WORD 0                 ;IP16
15855  073114  000000                           .WORD 0                 ;IP17
15856  073116  000000                           .WORD 0                 ;IP20
15857  073120  000000                           .WORD 0                 ;IP21
15858  073122  000000                           .WORD 0                 ;IP22
15859  073124  000000                           .WORD 0                 ;IP23
15860  073126  000000                           .WORD 0                 ;IP24
15861
15862                                   ;TOTAL # OF TESTS = 8
```

```
15864                                   .SBTTL          L3D TABLES
15865                                   ;
15866                                   ;ENTRY 0.2 - INSTRUCTION UNDER TEST = L3DR
15867                                   ;
15868  073130  000033                   IL3D:   .WORD 33                ;INST=L3DR; NOTE:R IS CALCULATED USING IP7.
15869  073132  000003                           .WORD 3                 ;TYPE = 1(BIT 0);11/44 QV TABLE(BIT 1=1)
15870  073134  110450                           .WORD T53               ;IP1 - R0 PATTERN
15871  073136  110460                           .WORD T54               ;IP2 - R1 PATTERN
15872  073140  110470                           .WORD T55               ;IP3 - R2 PATTERN
15873  073142  110500                           .WORD T56               ;IP4 - R3 PATTERN
15874  073144  110510                           .WORD T57               ;IP5 - R4 PATTERN
15875  073146  110520                           .WORD T60               ;IP6 - R5 PATTERN
15876  073150  110530                           .WORD T61               ;IP7 - DESC ADDRESS
15877  073152  000000                           .WORD 0                 ;IP10
15878  073154  000000                           .WORD 0                 ;IP11
15879  073156  000000                           .WORD 0                 ;IP12
15880  073160  000000                           .WORD 0                 ;IP13
15881  073162  000000                           .WORD 0                 ;IP14
15882  073164  000000                           .WORD 0                 ;IP15
15883  073166  000000                           .WORD 0                 ;IP16
15884  073170  000000                           .WORD 0                 ;IP17
15885  073172  000000                           .WORD 0                 ;IP20
15886  073174  000000                           .WORD 0                 ;IP21
15887  073176  000000                           .WORD 0                 ;IP22
15888  073200  000000                           .WORD 0                 ;IP23
15889  073202  000000                           .WORD 0                 ;IP24
15890
15891                                   ;TOTAL # OF TESTS = 8
```

```
                                        .SBTTL          MOVC TABLES
                                        ;ENTRY 1 - INST UNDER TEST = MOVC
                                        ;
15897  073204  000001                   IMOVC:  .WORD   1               ;INST=MOVC
15898  073206  000003                           .WORD 3                 ;TYPE = 1(BIT 0);11/44 QV TABLE(BIT 1=1)
15899  073210  103726                           .WORD   TL1C            ;IP1 - SRC.LEN
15900  073212  103766                           .WORD   T2              ;IP2 - SRC.ADR
15901  073214  103746                           .WORD   TL2C            ;IP3 - DST.LEN
15902  073216  104022                           .WORD   T4              ;IP4 - DST.ADR
15903  073220  104660                           .WORD   T5              ;IP5 - FILL
15904  073222  104710                           .WORD   T6              ;IP6 - SRC DATA
15905  073224  104742                           .WORD   T7              ;IP7 - SRC SURR DATA
15906  073226  104760                           .WORD   T10             ;IP10 - SRC.SURR.LEN
15907  073230  104774                           .WORD   T11             ;IP11 - DST DATA
15908  073232  105012                           .WORD   T12             ;IP12 - DST SURR DATA
15909  073234  105030                           .WORD   T13             ;IP13 - DST.SURR.LEN
15910  073236  105044                           .WORD   T14             ;IP14 - SEPARATION CONSTANT
15911  073240  000000                           .WORD   0               ;IP15 - (TRANSLATION TABLE FOR MOVTC)
15912  073242  103412                           .WORD   T0              ;IP16 - SPECIAL HANDLING
15913  073244  000000                           .WORD   0               ;IP17
15914  073246  000000                           .WORD   0               ;IP20
15915  073250  000000                           .WORD   0               ;IP21
15916  073252  000000                           .WORD   0               ;IP22
15917  073254  000000                           .WORD   0               ;IP23
15918  073256  000000                           .WORD   0               ;IP24
15919
15920                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
15921                                   ;
15922                                   ;       SOURCE LENGTH - 0,1,300
15923                                   ;       DESTINATION LENGTH - 0,1,5
15924                                   ;       SOURCE ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER)
15925                                   ;       DESTINATION ADDRESS - NO OVERLAP OF SOURCE & DEST. STRINGS;SOURCE ADD < DEST. AD
15926                                   ;                           - NO OVERLAP OF SOURCE & DEST. STRINGS;SOURCE ADD > DEST. AD
15927                                   ;                           - SOURCE & DEST. STRINGS ADJACENT; SOURCE ADD < DEST ADD
15928                                   ;                           - SOURCE & DEST. STRINGS ADJACENT; SOURCE ADD > DEST ADD
15929                                   ;                           - SOURCE STRING PARTIALLY OVERLAPS DEST STRING; SRC ADD < DE
15930                                   ;                           - SOURCE STRING PARTIALLY OVERLAPS DEST STRING; SRC ADD > DE
15931                                   ;                           - COMPLETE OVERLAP OF SOURCE AND DEST STRINGS; SOURCE ADD =
15932                                   ;       SOURCE DATA - INCREMENTING SEQUENCE; INC=1,START # = 1.
15933                                   ;
15934                                   ;TOTAL # OF TEST CONDITIONS = 48
15935                                   ;TOTAL # OF TESTS = (1 REG. + 1 INLINE)48 = 96
15936                                   ;
```

```
15938                                   ;ENTRY 2 - INST UNDER TEST = MOVC
15939                                   ;
15940  073260  000001                   IMOVC1: .WORD   1               ;INST=MOVC
15941  073262  000003                           .WORD 3                 ;TYPE = 1(BIT 0);11/44 QV TABLE(BIT 1=1)
15942  073264  103436                           .WORD   T1A             ;IP1 - SRC.LEN
15943  073266  104004                           .WORD   T2AA            ;IP2 - SRC.ADR
15944  073270  103436                           .WORD   T1A             ;IP3 - DST.LEN
15945  073272  104264                           .WORD   T4A             ;IP4 - DST.ADR
15946  073274  104660                           .WORD   T5              ;IP5 - FILL
15947  073276  104732                           .WORD   T6A             ;IP6 - SRC DATA
15948  073300  103412                           .WORD   T0              ;IP7 - SRC SURR DATA
15949  073302  103412                           .WORD   T0              ;IP10 - SRC.SURR.LEN
15950  073304  103412                           .WORD   T0              ;IP11 - DST DATA
15951  073306  103412                           .WORD   T0              ;IP12 - DST SURR DATA
15952  073310  103412                           .WORD   T0              ;IP13 - DST.SURR.LEN
15953  073312  105044                           .WORD   T14             ;IP14 - SEPARATION CONSTANT
15954  073314  000000                           .WORD   0               ;IP15 - (TRANSLATION TABLE FOR MOVTC)
15955  073316  103662                           .WORD   TSPA            ;IP16 - SPECIAL HANDLING
15956  073320  000000                           .WORD   0               ;IP17
15957  073322  000000                           .WORD   0               ;IP20
15958  073324  000000                           .WORD   0               ;IP21
15959  073326  000000                           .WORD   0               ;IP22
15960  073330  000000                           .WORD   0               ;IP23
15961  073332  000000                           .WORD   0               ;IP24
15962
15963                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
15964                                   ;
15965                                   ;       SOURCE LENGTH - 0,1,2,3,4,5,11,20
15966                                   ;       DESTINATION LENGTH - 0,1,2,3,4,5,11,20
15967                                   ;       SOURCE ADDRESS - 200,201 (RELATIVE TO START OF TEST BUFFER)
15968                                   ;       DESTINATION ADDRESS - SOURCE STRING PARTIALLY OVERLAPS DEST STRING; SRC ADD < DE
15969                                   ;                           - SOURCE STRING PARTIALLY OVERLAPS DEST STRING; SRC ADD > DE
15970                                   ;       SOURCE DATA - INCREMENTING SEQUENCE; INC=1,START#=0
15971                                   ;
15972                                   ;TOTAL # OF TEST CONDITIONS = 256
15973                                   ;TOTAL # OF TESTS = (1 REG.)256 = 256
15974                                   ;
```

```
15976                                   ;ENTRY 3 - INST UNDER TEST = MOVC
15977                                   ;
15978  073334  000001                   IMOVC2: .WORD   1               ;INST=MOVC
15979  073336  000000                           .WORD   0               ;TYPE = 0
15980  073340  100010                           .WORD   100010          ;IP1 - SRC.LEN
15981  073342  000201                           .WORD   201             ;IP2 - SRC.ADR
15982  073344  000011                           .WORD   000011          ;IP3 - DST.LEN
15983  073346  000224                           .WORD   224             ;IP4 - DST.ADR
15984  073350  000377                           .WORD   377             ;IP5 - FILL
15985  073352  104712                           .WORD   T6+2            ;IP6 - SRC DATA
15986  073354  000240                           .WORD   240             ;IP7 - SRC SURR DATA
15987  073356  000000                           .WORD   0               ;IP10 - SRC.SURR.LEN
15988  073360  000252                           .WORD   252             ;IP11 - DST DATA
15989  073362  000360                           .WORD   360             ;IP12 - DST SURR DATA
15990  073364  000000                           .WORD   0               ;IP13 - DST.SURR.LEN
15991  073366  000000                           .WORD   0               ;IP14 - SEPARATION CONSTANT
15992  073370  000000                           .WORD   0               ;IP15
15993  073372  000003                           .WORD   3               ;IP16 - SPECIAL HANDLING
15994  073374  000000                           .WORD   0               ;IP17
15995  073376  000000                           .WORD   0               ;IP20
15996  073400  000000                           .WORD   0               ;IP21
15997  073402  000000                           .WORD   0               ;IP22
15998  073404  000000                           .WORD   0               ;IP23
15999  073406  000000                           .WORD   0               ;IP24
16000                                   ;
16001                                   ;THIS TABLE EXERCISE THE FOLLOWING TEST CONDITION:
16002                                   ;
16003                                   ;       SOURCE LENGTH - 100010
16004                                   ;       DESTINATION LENGTH - 11
16005                                   ;       SOURCE ADDRESS - 201 (RELATIVE TO START OF TEST BUFFER)
16006                                   ;       DESTINATION ADDRESS - 224 (RELATIVE TO START OF TEST BUFFER)
16007                                   ;       SOURCE DATA - INCREMENTING SEQUENCE; INC=1,START # = 1.
16008                                   ;
16009                                   ;THIS TEST WAS ADDED TO EXERCISE & TEST THE MOVC V-BIT OPERATION
16010                                   ;TOTAL # OF TESTS = (1 REG. + 1 INLINE)= 2
16011                                   ;
```

```
16013                                   .SBTTL          LOCC TABLES
16014                                   ;
16015                                   ;ENTRY 4 - INSTRUCTION UNDER TEST = LOCC
16016                                   ;
16017  073410  000004                   ILOCC:  .WORD   4               ;INST=LOCC
16018  073412  000003                           .WORD 3                 ;TYPE = 1(BIT 0);11/44 QV TABLE(BIT 1=1)
16019  073414  103726                           .WORD   TL1C            ;IP1 - SRC.LEN
16020  073416  103766                           .WORD   T2              ;IP2 - SRC.ADR
16021  073420  105070                           .WORD   T15             ;IP3 - CHAR
16022  073422  104710                           .WORD   T6              ;IP4 - SRC DATA
16023  073424  104742                           .WORD   T7              ;IP5 - SRC SURR DATA
16024  073426  104760                           .WORD   T10             ;IP6 - SRC.SURR.LEN
16025  073430  103412                           .WORD   T0              ;IP7 - SPECIAL HANDLING
16026  073432  000000                           .WORD   0               ;IP10
16027  073434  000000                           .WORD   0               ;IP11
16028  073436  000000                           .WORD   0               ;IP12
16029  073440  000000                           .WORD   0               ;IP13
16030  073442  000000                           .WORD   0               ;IP14
16031  073444  000000                           .WORD   0               ;IP15
16032  073446  000000                           .WORD   0               ;IP16
16033  073450  000000                           .WORD   0               ;IP17
16034  073452  000000                           .WORD   0               ;IP20
16035  073454  000000                           .WORD   0               ;IP21
16036  073456  000000                           .WORD   0               ;IP22
16037  073460  000000                           .WORD   0               ;IP23
16038  073462  000000                           .WORD   0               ;IP24
16039
16040                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
16041                                   ;
16042                                   ;       SOURCE LENGTH - 0,1,300
16043                                   ;       SOURCE ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER)
16044                                   ;       CHAR - 004,375,240
16045                                   ;       SOURCE DATA - INCREMENTING SEQUENCE;INC=1,START#=1
16046                                   ;
16047                                   ;TOTAL # OF TEST CONDITIONS = 9
16048                                   ;TOTAL # OF TESTS = (1 REG. + 1 INLINE)9 = 18
16049                                   ;
```

```
16051
16052                                   ;ENTRY 5 - INSTRUCTION UNDER TEST = LOCC
16053                                   ;
16054  073464  000004                   ILOCC1: .WORD   4               ;INST=LOCC
16055  073466  000003                           .WORD 3                 ;TYPE = 1(BIT 0);11/44 QV TABLE(BIT 1=1)
16056  073470  103436                           .WORD   T1A             ;IP1 - SRC.LEN
16057  073472  104004                           .WORD   T2AA            ;IP2 - SRC.ADR
16058  073474  105110                           .WORD   T15A            ;IP3 - CHAR
16059  073476  104732                           .WORD   T6A             ;IP4 - SRC DATA
16060  073500  103412                           .WORD   T0              ;IP5 - SRC SURR DATA
16061  073502  103412                           .WORD   T0              ;IP6 - SRC.SURR.LEN
16062  073504  103662                           .WORD   TSPA            ;IP7 - SPECIAL HANDLING
16063  073506  000000                           .WORD   0               ;IP10
16064  073510  000000                           .WORD   0               ;IP11
16065  073512  000000                           .WORD   0               ;IP12
16066  073514  000000                           .WORD   0               ;IP13
16067  073516  000000                           .WORD   0               ;IP14
16068  073520  000000                           .WORD   0               ;IP15
16069  073522  000000                           .WORD   0               ;IP16
16070  073524  000000                           .WORD   0               ;IP17
16071  073526  000000                           .WORD   0               ;IP20
16072  073530  000000                           .WORD   0               ;IP21
16073  073532  000000                           .WORD   0               ;IP22
16074  073534  000000                           .WORD   0               ;IP23
16075  073536  000000                           .WORD   0               ;IP24
16076
16077                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
16078                                   ;
16079                                   ;       SOURCE LENGTH - 0,1,2,3,4,5,11,20
16080                                   ;       SOURCE ADDRESS - 200,201 (RELATIVE TO START OF TEST BUFFER)
16081                                   ;       CHAR - 004
16082                                   ;       SOURCE DATA - INCREMENTING SEQUENCE; INC=1,START # =0
16083                                   ;
16084                                   ;TOTAL # OF TEST CONDITIONS = 16
16085                                   ;TOTAL # OF TESTS = (1 REG.)16 = 16
16086                                   ;
```

```
16088                                   ;
16089                                   ;ENTRY 6 - INSTRUCTION UNDER TEST = LOCC
16090                                   ;
16091  073540  000004                   ;LOCC2: .WORD   4               ;INST=LOCC
16092  073542  000000                           .WORD   0               ;TYPE = 0
16093  073544  100011                           .WORD   100011          ;IP1 - SRC.LEN
16094  073546  000201                           .WORD   201             ;IP2 - SRC.ADR
16095  073550  000002                           .WORD   2               ;IP3 - CHAR
16096  073552  104712                           .WORD   T6+2            ;IP4 - SRC DATA DESCRIPTOR ADR
16097  073554  000000                           .WORD   0               ;IP5 - SRC SURR DATA DESCRIPTOR ADR
16098  073556  000000                           .WORD   0               ;IP6 - SRC.SURR.LEN
16099  073560  000003                           .WORD   3               ;IP7 - SPECIAL HANDLING
16100  073562  000000                           .WORD   0               ;IP10
16101  073564  000000                           .WORD   0               ;IP11
16102  073566  000000                           .WORD   0               ;IP12
16103  073570  000000                           .WORD   0               ;IP13
16104  073572  000000                           .WORD   0               ;IP14
16105  073574  000000                           .WORD   0               ;IP15
16106  073576  000000                           .WORD   0               ;IP16
16107  073600  000000                           .WORD   0               ;IP17
16108  073602  000000                           .WORD   0               ;IP20
16109  073604  000000                           .WORD   0               ;IP21
16110  073606  000000                           .WORD   0               ;IP22
16111  073610  000000                           .WORD   0               ;IP23
16112  073612  000000                           .WORD   0               ;IP24
16113                                   ;
16114                                   ;THIS TABLE EXERCISE THE FOLLOWING TEST CONDITION:
16115                                   ;
16116                                   ;       SOURCE LENGTH - 100011
16117                                   ;       SOURCE ADDRESS - 201 (RELATIVE TO START OF TEST BUFFER)
16118                                   ;       CHAR - 002
16119                                   ;       SOURCE DATA - INCREMENTING SEQUENCE; INC=1, START#=1
16120                                   ;
16121                                   ;THIS TEST WAS ADDED TO EXERCISE & TEST THE LOCC V-BIT OPERATION
16122                                   ;TOTAL # OF TESTS = (1 REG. + 1 INLINE) = 2
16123                                   ;
```

```
16125                                   .SBTTL          CMPC TABLES
16126                                   ;
16127                                   ;ENTRY 7 - INSTRUCTION UNDER TEST = CMPC
16128                                   ;
16129  073614  000010                   ICMPC:  .WORD 10                ;INST = CMPC
16130  073616  000003                           .WORD 3                 ;TYPE = 1(BIT 0);11/44 QV TABLE(BIT 1=1)
16131  073620  103726                           .WORD TL1C              ;IP1 - SRC1.LEN
16132  073622  103766                           .WORD T2                ;IP2 - SRC1.ADR
16133  073624  103746                           .WORD TL2C              ;IP3 - SRC2.LEN
16134  073626  104632                           .WORD T411              ;IP4 - SRC2.ADR
16135  073630  104672                           .WORD T511              ;IP5 - FILL
16136  073632  106024                           .WORD T20               ;IP6 - SRC1.DATA
16137  073634  103412                           .WORD T0                ;IP7 - SRC1.SURR.DATA
16138  073636  104760                           .WORD T10               ;IP10 - SRC1.SURR.LEN
16139  073640  106024                           .WORD T20               ;IP11 - SRC2.DATA
16140  073642  105012                           .WORD T12               ;IP12 - SRC2.SURR.DATA
16141  073644  105030                           .WORD T13               ;IP13 - SRC2.SURR.LEN
16142  073646  105044                           .WORD T14               ;IP14 - SEPARATION CONSTANT
16143  073650  103412                           .WORD T0                ;IP15 - SPECIAL HANDLING
16144  073652  000000                           .WORD 0                 ;IP16
16145  073654  000000                           .WORD 0                 ;IP17
16146  073656  000000                           .WORD 0                 ;IP20
16147  073660  000000                           .WORD 0                 ;IP21
16148  073662  000000                           .WORD 0                 ;IP22
16149  073664  000000                           .WORD 0                 ;IP23
16150  073666  000000                           .WORD 0                 ;IP24
16151
16152                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
16153                                   ;
16154                                   ;       SOURCE 1 LENGTH - 0,1,300
16155                                   ;       SOURCE 2 LENGTH - 0,1,5
16156                                   ;       SOURCE 1 ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER)
16157                                   ;       SOURCE 2 ADDRESS - NO OVERLAP OF SOURCE STRINGS
16158                                   ;       FILL CHAR - 201,377,127
16159                                   ;       SOURCE 1 DATA - ALL STRING CHARS IDENTICAL = 127
16160                                   ;       SOURCE 2 DATA - ALL STRING CHARS IDENTICAL = 127
16161                                   ;
16162                                   ;TOTAL # OF TEST CONDITIONS = 27
16163                                   ;TOTAL # OF TESTS = (1 REG. + 1 INLINE)27 = 54
16164                                   ;
16165
```

```
16167
16168                                   ;ENTRY 8 - INSTRUCTION UNDER TEST = CMPC
16169                                   ;
16170  073670  000010                   ICMPC1: .WORD 10                ;INST = CMPC
16171  073672  000001                           .WORD 1                 ;TYPE = 1
16172  073674  106114                           .WORD TL21C             ;IP1 - SRC1.LEN
16173  073676  103766                           .WORD T2                ;IP2 - SRC1.ADR
16174  073700  106132                           .WORD TL22C             ;IP3 - SRC2.LEN
16175  073702  104022                           .WORD T4                ;IP4 - SRC2.ADR
16176  073704  104660                           .WORD T5                ;IP5 - FILL
16177  073706  104710                           .WORD T6                ;IP6 - SRC1.DATA
16178  073710  104742                           .WORD T7                ;IP7 - SRC1.SURR.DATA
16179  073712  104760                           .WORD T10               ;IP10 - SRC1.SURR.LEN
16180  073714  104710                           .WORD T6                ;IP11 - SRC2.DATA
16181  073716  105012                           .WORD T12               ;IP12 - SRC2.SURR.DATA
16182  073720  105030                           .WORD T13               ;IP13 - SRC2.SURR.LEN
16183  073722  105044                           .WORD T14               ;IP14 - SEPARATION CONSTANT
16184  073724  103412                           .WORD T0                ;IP15 - SPECIAL HANDLING
16185  073726  000000                           .WORD 0                 ;IP16
16186  073730  000000                           .WORD 0                 ;IP17
16187  073732  000000                           .WORD 0                 ;IP20
16188  073734  000000                           .WORD 0                 ;IP21
16189  073736  000000                           .WORD 0                 ;IP22
16190  073740  000000                           .WORD 0                 ;IP23
16191  073742  000000                           .WORD 0                 ;IP24
16192
16193                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
16194                                   ;
16195                                   ;       SOURCE 1 LENGTH - 1,5
16196                                   ;       SOURCE 2 LENGTH - 1,5
16197                                   ;       SOURCE 1 ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER)
16198                                   ;       SOURCE 2 ADDRESS - NO OVERLAP OF SOURCE & DEST. STRINGS;SOURCE ADD < DEST. ADD
16199                                   ;                         - NO OVERLAP OF SOURCE & DEST. STRINGS;SOURCE ADD > DEST. AD
16200                                   ;                         - SOURCE & DEST. STRINGS ADJACENT; SOURCE ADD < DEST ADD
16201                                   ;                         - SOURCE & DEST. STRINGS ADJACENT; SOURCE ADD > DEST ADD
16202                                   ;                         - SOURCE STRING PARTIALLY OVERLAPS DEST STRING; SRC ADD < DE
16203                                   ;                         - SOURCE STRING PARTIALLY OVERLAPS DEST STRING; SRC ADD > DE
16204                                   ;                         - COMPLETE OVERLAP OF SOURCE AND DEST STRINGS; SOURCE ADD =
16205                                   ;       FILL CHAR - 377
16206                                   ;       SOURCE 1 DATA - INCREMENTING SEQUENCE; INC=1,START # =1
16207                                   ;       SOURCE 2 DATA - INCREMENTING SEQUENCE; INC=1,START # =1
16208                                   ;
16209                                   ;TOTAL # OF TEST CONDITIONS = 26
16210                                   ;TOTAL # OF TESTS = (1 REG + 1 IN-LINE)26 = 52
16211                                   ;
```

```
16213
16214                                   ;ENTRY 9 - INSTRUCTION UNDER TEST = CMPC
16215                                   ;
16216  073744  000010                   ICMPC2: .WORD 10                ;INST = CMPC
16217  073746  000003                           .WORD 3                 ;TYPE = 1(BIT 0);11/44 QV TABLE(BIT 1=1)
16218  073750  103436                           .WORD T1A               ;IP1 - SRC1.LEN
16219  073752  104004                           .WORD T2AA              ;IP2 - SRC1.ADR
16220  073754  103436                           .WORD T1A               ;IP3 - SRC2.LEN
16221  073756  104264                           .WORD T4A               ;IP4 - SRC2.ADR
16222  073760  104660                           .WORD T5                ;IP5 - FILL
16223  073762  104732                           .WORD T6A               ;IP6 - SRC1.DATA
16224  073764  103412                           .WORD T0                ;IP7 - SRC1.SURR.DATA
16225  073766  103412                           .WORD T0                ;IP10 - SRC1.SURR.LEN
16226  073770  104732                           .WORD T6A               ;IP11 - SRC2.DATA
16227  073772  103412                           .WORD T0                ;IP12 - SRC2.SURR.DATA
16228  073774  103412                           .WORD T0                ;IP13 - SRC2.SURR.LEN
16229  073776  105044                           .WORD T14               ;IP14 - SEPARATION CONSTANT
16230  074000  103662                           .WORD TSPA              ;IP15 - SPECIAL HANDLING
16231  074002  000000                           .WORD 0                 ;IP16
16232  074004  000000                           .WORD 0                 ;IP17
16233  074006  000000                           .WORD 0                 ;IP20
16234  074010  000000                           .WORD 0                 ;IP21
16235  074012  000000                           .WORD 0                 ;IP22
16236  074014  000000                           .WORD 0                 ;IP23
16237  074016  000000                           .WORD 0                 ;IP24
16238
16239                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
16240                                   ;
16241                                   ;       SOURCE 1 LENGTH - 0,1,2,3,4,5,11,20
16242                                   ;       SOURCE 2 LENGTH - 0,1,2,3,4,5,11,20
16243                                   ;       SOURCE 1 ADDRESS - 200,201 (RELATIVE TO START OF TEST BUFFER)
16244                                   ;       SOURCE 2 ADDRESS - SOURCE STRING PARTIALLY OVERLAPS DEST STRING; SRC ADD < DEST
16245                                   ;                         - SOURCE STRING PARTIALLY OVERLAPS DEST STRING; SRC ADD > DE
16246                                   ;       FILL CHAR - 006
16247                                   ;       SOURCE 1 DATA - INCREMENTING SEQUENCE; INC=1,START # =0
16248                                   ;       SOURCE 2 DATA - INCREMENTING SEQUENCE; INC=1,START # =0
16249                                   ;
16250                                   ;TOTAL # OF TEST CONDITIONS = 256
16251                                   ;TOTAL # OF TESTS = (1 REG.)256 = 256
16252                                   ;
```

```
16254                                   .SBTTL          MOVRC TABLES
16255                                   ;
16256                                   ;ENTRY 10 - INSTRUCTION UNDER TEST = MOVRC
16257                                   ;
16258  074020  000002                  IMOVR:  .WORD   2               ;INST=MOVRC
16259  074022  000003                          .WORD 3                 ;TYPE = 1(BIT 0);11/44 QV TABLE(BIT 1=1)
16260  074024  103726                          .WORD   TL1C            ;IP1 - SRC.LEN
16261  074026  103766                          .WORD   T2              ;IP2 - SRC.ADR
16262  074030  103746                          .WORD   TL2C            ;IP3 - DST.LEN
16263  074032  104022                          .WORD   T4              ;IP4 - DST.ADR
16264  074034  104660                          .WORD   T5              ;IP5 - FILL
16265  074036  104710                          .WORD   T6              ;IP6 - SRC DATA
16266  074040  104742                          .WORD   T7              ;IP7 - SRC SURR DATA
16267  074042  104760                          .WORD   T10             ;IP10 - SRC.SURR.LEN
16268  074044  104774                          .WORD   T11             ;IP11 - DST DATA
16269  074046  105012                          .WORD   T12             ;IP12 - DST SURR DATA
16270  074050  105030                          .WORD   T13             ;IP13 - DST.SURR.LEN
16271  074052  105044                          .WORD   T14             ;IP14 - SEPARATION CONSTANT
16272  074054  000000                          .WORD   0               ;IP15
16273  074056  103412                          .WORD   T0              ;IP16 - SPECIAL HANDLING
16274  074060  000000                          .WORD   0               ;IP17
16275  074062  000000                          .WORD   0               ;IP20
16276  074064  000000                          .WORD   0               ;IP21
16277  074066  000000                          .WORD   0               ;IP22
16278  074070  000000                          .WORD   0               ;IP23
16279  074072  000000                          .WORD   0               ;IP24
16280
16281                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
16282                                   ;
16283                                   ;       SOURCE LENGTH - 0,1,300
16284                                   ;       DESTINATION LENGTH - 0,1,5
16285                                   ;       SOURCE ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER)
16286                                   ;       DESTINATION ADDRESS - NO OVERLAP OF SOURCE & DEST. STRINGS;SOURCE ADD < DEST. AD
16287                                   ;                           - NO OVERLAP OF SOURCE & DEST. STRINGS;SOURCE ADD > DEST. AD
16288                                   ;                           - SOURCE & DEST. STRINGS ADJACENT; SOURCE ADD < DEST ADD
16289                                   ;                           - SOURCE & DEST. STRINGS ADJACENT; SOURCE ADD > DEST ADD
16290                                   ;                           - SOURCE STRING PARTIALLY OVERLAPS DEST STRING; SRC ADD < DE
16291                                   ;                           - SOURCE STRING PARTIALLY OVERLAPS DEST STRING; SRC ADD > DE
16292                                   ;                           - COMPLETE OVERLAP OF SOURCE AND DEST STRINGS; SOURCE ADD =
16293                                   ;       SOURCE DATA - INCREMENTING SEQUENCE; INC=1,START # = 1.
16294                                   ;
16295                                   ;TOTAL # OF TEST CONDITIONS = 48
16296                                   ;TOTAL # OF TESTS = (1 REG. + 1 INLINE) 48  = 96
16297                                   ;
```

```
16299                                   ;
16300                                   ;ENTRY 11 - INSTRUCTION UNDER TEST = MOVRC
16301                                   ;
16302  074074  000002                   IMOVR1: .WORD   2               ;INST=MOVRC
16303  074076  000001                           .WORD   1               ;TYPE = 1
16304  074100  103436                           .WORD   T1A             ;IP1 - SRC.LEN
16305  074102  104004                           .WORD   T2AA            ;IP2 - SRC.ADR
16306  074104  103436                           .WORD   T1A             ;IP3 - DST.LEN
16307  074106  104264                           .WORD   T4A             ;IP4 - DST.ADR
16308  074110  104660                           .WORD   T5              ;IP5 - FILL
16309  074112  104732                           .WORD   T6A             ;IP6 - SRC DATA
16310  074114  103412                           .WORD   T0              ;IP7 - SRC SURR DATA
16311  074116  103412                           .WORD   T0              ;IP10 - SRC.SURR.LEN
16312  074120  103412                           .WORD   T0              ;IP11 - DST DATA
16313  074122  103412                           .WORD   T0              ;IP12 - DST SURR DATA
16314  074124  103412                           .WORD   T0              ;IP13 - DST.SURR.LEN
16315  074126  105044                           .WORD   T14             ;IP14 - SEPARATION CONSTANT
16316  074130  000000                           .WORD   0               ;IP15
16317  074132  103662                           .WORD   TSPA            ;IP16 - SPECIAL HANDLING
16318  074134  000000                           .WORD   0               ;IP17
16319  074136  000000                           .WORD   0               ;IP20
16320  074140  000000                           .WORD   0               ;IP21
16321  074142  000000                           .WORD   0               ;IP22
16322  074144  000000                           .WORD   0               ;IP23
16323  074146  000000                           .WORD   0               ;IP24
16324
16325                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
16326                                   ;
16327                                   ;       SOURCE LENGTH - 0,1,2,3,4,5,11,20
16328                                   ;       DESTINATION LENGTH - 0,1,2,3,4,5,11,20
16329                                   ;       SOURCE ADDRESS - 200,201 (RELATIVE TO START OF TEST BUFFER)
16330                                   ;       DESTINATION ADDRESS - SOURCE STRING PARTIALLY OVERLAPS DEST STRING; SRC ADD<DEST
16331                                   ;                           - SOURCE STRING PARTIALLY OVERLAPS DEST STRING; SRC ADD>DEST
16332                                   ;       SOURCE DATA - INCREMENTING SEQUENCE; INC=1,START#=0
16333                                   ;
16334                                   ;TOTAL # OF TEST CONDITIONS = 256
16335                                   ;TOTAL # OF TESTS = (1 REG.)256 = 256
16336                                   ;
```

```
16338                                   ;
16339                                   ;ENTRY 12 - INSTRUCTION UNDER TEST = MOVRC
16340                                   ;
16341  074150  000002                  IMOVR2: .WORD   2               ;INST=MOVRC
16342  074152  000000                          .WORD   0               ;TYPE = 0
16343  074154  100100                          .WORD   100100          ;IP1 - SRC.LEN
16344  074156  100000                          .WORD   100000          ;IP2 - SRC.ADR
16345  074160  000111                          .WORD   000111          ;IP3 - DST.LEN
16346  074162  000100                          .WORD   100             ;IP4 - DST.ADR
16347  074164  000376                          .WORD   376             ;IP5 - FILL
16348  074166  104712                          .WORD   T6+2            ;IP6 - SRC DATA
16349  074170  000240                          .WORD   240             ;IP7 - SRC SURR DATA
16350  074172  000000                          .WORD   0               ;IP10 - SRC.SURR.LEN
16351  074174  000255                          .WORD   255             ;IP11 - DST DATA
16352  074176  000366                          .WORD   366             ;IP12 - DST SURR DATA
16353  074200  000000                          .WORD   0               ;IP13 - DST.SURR.LEN
16354  074202  000000                          .WORD   0               ;IP14 - SEPARATION CONSTANT
16355  074204  000000                          .WORD   0               ;IP15
16356  074206  000037                          .WORD   37              ;IP16 - SPECIAL HANDLING
16357  074210  000000                          .WORD   0               ;IP17
16358  074212  000000                          .WORD   0               ;IP20
16359  074214  000000                          .WORD   0               ;IP21
16360  074216  000000                          .WORD   0               ;IP22
16361  074220  000000                          .WORD   0               ;IP23
16362  074222  000000                          .WORD   0               ;IP24
16363
16364                                   ;THIS TABLE EXERCISE THE FOLLOWING TEST CONDITION:
16365                                   ;
16366                                   ;       SOURCE LENGTH - 100100
16367                                   ;       DESTINATION LENGTH - 111
16368                                   ;       SOURCE ADDRESS - 100000 (RELATIVE TO START OF TEST BUFFER)
16369                                   ;       DESTINATION ADDRESS - 100 (RELATIVE TO START OF TEST BUFFER)
16370                                   ;       SOURCE DATA - INCREMENTING SEQUENCE; INC=1,START # = 1.
16371                                   ;
16372                                   ;THIS TEST WAS ADDED TO EXERCISE & TEST THE MOVRC V-BIT OPERATION
16373                                   ;TOTAL # OF TESTS = (1 REG. + 1 INLINE)= 2
16374                                   ;
```

```
16376                                   .SBTTL          MOVTC TABLES
16377                                   ;ENTRY 13 - INSTRUCTION UNDER TEST = MOVTC
16378                                   ;
16379  074224  000003                  IMOVT:  .WORD   3               ;INST=MOVTC
16380  074226  000001                          .WORD   1               ;TYPE = 1
16381  074230  103726                          .WORD   TL1C            ;IP1 - SRC.LEN
16382  074232  103766                          .WORD   T2              ;IP2 - SRC.ADR
16383  074234  103746                          .WORD   TL2C            ;IP3 - DST.LEN
16384  074236  104022                          .WORD   T4              ;IP4 - DST.ADR
16385  074240  104660                          .WORD   T5              ;IP5 - FILL
16386  074242  104710                          .WORD   T6              ;IP6 - SRC DATA
16387  074244  104742                          .WORD   T7              ;IP7 - SRC SURR DATA
16388  074246  104760                          .WORD   T10             ;IP10 - SRC.SURR.LEN
16389  074250  104774                          .WORD   T11             ;IP11 - DST DATA
16390  074252  105012                          .WORD   T12             ;IP12 - DST SURR DATA
16391  074254  105030                          .WORD   T13             ;IP13 - DST.SURR.LEN
16392  074256  105044                          .WORD   T14             ;IP14 - SEPARATION CONSTANT
16393  074260  106210                          .WORD   T24             ;IP15 - TRANSLATION TABLE
16394  074262  103412                          .WORD   T0              ;IP16 - SPECIAL HANDLING
16395  074264  000000                          .WORD   0               ;IP17
16396  074266  000000                          .WORD   0               ;IP20
16397  074270  000000                          .WORD   0               ;IP21
16398  074272  000000                          .WORD   0               ;IP22
16399  074274  000000                          .WORD   0               ;IP23
16400  074276  000000                          .WORD   0               ;IP24
16401
16402                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
16403                                   ;
16404                                   ;       SOURCE LENGTH - 0,1,300
16405                                   ;       DESTINATION LENGTH - 0,1,5
16406                                   ;       SOURCE ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER)
16407                                   ;       DESTINATION ADDRESS - NO OVERLAP OF SOURCE & DEST. STRINGS;SOURCE ADD < DEST. AD
16408                                   ;                           - NO OVERLAP OF SOURCE & DEST. STRINGS;SOURCE ADD > DEST. AD
16409                                   ;                           - SOURCE & DEST. STRINGS ADJACENT; SOURCE ADD < DEST ADD
16410                                   ;                           - SOURCE & DEST. STRINGS ADJACENT; SOURCE ADD > DEST ADD
16411                                   ;                           - SOURCE STRING PARTIALLY OVERLAPS DEST STRING; SRC ADD < DE
16412                                   ;                           - SOURCE STRING PARTIALLY OVERLAPS DEST STRING; SRC ADD > DE
16413                                   ;                           - COMPLETE OVERLAP OF SOURCE AND DEST STRINGS; SOURCE ADD =
16414                                   ;       SOURCE DATA - INCREMENTING SEQUENCE; INC=1,START # = 1.
16415                                   ;       TRANSLATION TABLE DATA = 1 IN LOC 0, 2 IN LOC 1, ETC
16416                                   ;
16417                                   ;TOTAL # OF TEST CONDITIONS = 48
16418                                   ;TOTAL # OF TESTS = (1 REG. + 1 INLINE) 48 = 96
16419
```

```
16421                                   ;ENTRY 14 - INSTRUCTION UNDER TEST = MOVTC
16422                                   ;
16423  074300  000003                  IMOVT1: .WORD   3               ;INST=MOVTC
16424  074302  000003                          .WORD 3                 ;TYPE = 1(BIT 0);11/44 QV TABLE(BIT 1=1)
16425  074304  103436                          .WORD   T1A             ;IP1 - SRC.LEN
16426  074306  104004                          .WORD   T2AA            ;IP2 - SRC.ADR
16427  074310  103436                          .WORD   T1A             ;IP3 - DST.LEN
16428  074312  104264                          .WORD   T4A             ;IP4 - DST.ADR
16429  074314  104660                          .WORD   T5              ;IP5 - FILL
16430  074316  104732                          .WORD   T6A             ;IP6 - SRC DATA
16431  074320  103412                          .WORD   T0              ;IP7 - SRC SURR DATA
16432  074322  103412                          .WORD   T0              ;IP10 - SRC.SURR.LEN
16433  074324  103412                          .WORD   T0              ;IP11 - DST DATA
16434  074326  103412                          .WORD   T0              ;IP12 - DST SURR DATA
16435  074330  103412                          .WORD   T0              ;IP13 - DST.SURR.LEN
16436  074332  105044                          .WORD   T14             ;IP14 - SEPARATION CONSTANT
16437  074334  106210                          .WORD   T24             ;IP15 - TRANSLATION TABLE
16438  074336  103662                          .WORD   TSPA            ;IP16 - SPECIAL HANDLING
16439  074340  000000                          .WORD   0               ;IP17
16440  074342  000000                          .WORD   0               ;IP20
16441  074344  000000                          .WORD   0               ;IP21
16442  074346  000000                          .WORD   0               ;IP22
16443  074350  000000                          .WORD   0               ;IP23
16444  074352  000000                          .WORD   0               ;IP24
16445
16446                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
16447                                   ;
16448                                   ;       SOURCE LENGTH - 0,1,2,3,4,5,11,20
16449                                   ;       DESTINATION LENGTH - 0,1,2,3,4,5,11,20
16450                                   ;       SOURCE ADDRESS - 200,201 (RELATIVE TO START OF TEST BUFFER)
16451                                   ;       DESTINATION ADDRESS - SOURCE STRING PARTIALLY OVERLAPS DEST STRING;SRC ADD<DEST
16452                                   ;                           - SOURCE STRING PARTIALLY OVERLAPS DEST STRING; SRC ADD>DEST
16453                                   ;       SOURCE DATA - INCREMENTING SEQUENCE; INC=1,START#=0
16454                                   ;       TRANSLATION TABLE DATA = 1 IN LOC 0, 2 IN LOC 1, ETC
16455                                   ;
16456                                   ;TOTAL # OF TEST CONDITIONS = 256
16457                                   ;TOTAL # OF TESTS = (1 REG.)256 = 256
16458                                   ;
16459
```

```
16461                                   ;ENTRY 15 - INSTRUCTION UNDER TEST = MOVTC
16462                                   ;
16463  074354  000003                   IMOVT2: .WORD   3               ;INST=MOVTC
16464  074356  000000                           .WORD   0               ;TYPE = 0
16465  074360  100010                           .WORD   100010          ;IP1 - SRC.LEN
16466  074362  000201                           .WORD   201             ;IP2 - SRC.ADR
16467  074364  000011                           .WORD   000011          ;IP3 - DST.LEN
16468  074366  000225                           .WORD   225             ;IP4 - DST.ADR
16469  074370  000375                           .WORD   375             ;IP5 - FILL
16470  074372  104712                           .WORD   T6+2            ;IP6 - SRC DATA
16471  074374  000240                           .WORD   240             ;IP7 - SRC SURR DATA
16472  074376  000000                           .WORD   0               ;IP10 - SRC.SURR.LEN
16473  074400  000254                           .WORD   254             ;IP11 - DST DATA
16474  074402  000355                           .WORD   355             ;IP12 - DST SURR DATA
16475  074404  000000                           .WORD   0               ;IP13 - DST.SURR.LEN
16476  074406  000000                           .WORD   0               ;IP14 - SEPARATION CONSTANT
16477  074410  001734                           .WORD   IXLTB1          ;IP15 - TRANSLATION TABLE
16478  074412  000003                           .WORD   3               ;IP16 - SPECIAL HANDLING
16479  074414  000000                           .WORD   0               ;IP17
16480  074416  000000                           .WORD   0               ;IP20
16481  074420  000000                           .WORD   0               ;IP21
16482  074422  000000                           .WORD   0               ;IP22
16483  074424  000000                           .WORD   0               ;IP23
16484  074426  000000                           .WORD   0               ;IP24
16485
16486                                   ;THIS TABLE EXERCISE THE FOLLOWING TEST CONDITION:
16487                                   ;
16488                                   ;       SOURCE LENGTH - 100010
16489                                   ;       DESTINATION LENGTH - 11
16490                                   ;       SOURCE ADDRESS - 201 (RELATIVE TO START OF TEST BUFFER)
16491                                   ;       DESTINATION ADDRESS - 225 (RELATIVE TO START OF TEST BUFFER)
16492                                   ;       SOURCE DATA - INCREMENTING SEQUENCE; INC=1,START # = 1.
16493                                   ;       TRANSLATION TABLE DATA = 1 IN LOC 0, 2 IN LOC 1, ETC
16494                                   ;
16495                                   ;THIS TEST WAS ADDED TO EXERCISE & TEST THE MOVTC V-BIT OPERATION
16496                                   ;TOTAL # OF TESTS = (1 REG. + 1 INLINE)= 2
16497                                   ;
```

```
16499                                   .SBTTL          SKPC TABLES
16500                                   ;ENTRY 16 - INSTRUCTION UNDER TEST = SKPC
16501                                   ;
16502  074430  000005                   ISKPC:  .WORD   5               ;INST=SKPC
16503  074432  000001                           .WORD   1               ;TYPE = 1
16504  074434  103726                           .WORD   TL1C            ;IP1 - SRC.LEN
16505  074436  103766                           .WORD   T2              ;IP2 - SRC.ADR
16506  074440  106224                           .WORD   T25             ;IP3 - CHAR
16507  074442  106250                           .WORD   T26             ;IP4 - SRC DATA
16508  074444  104742                           .WORD   T7              ;IP5 - SRC SURR DATA
16509  074446  104760                           .WORD   T10             ;IP6 - SRC.SURR.LEN
16510  074450  103412                           .WORD   T0              ;IP7 - SPECIAL HANDLING
16511  074452  000000                           .WORD   0               ;IP10
16512  074454  000000                           .WORD   0               ;IP11
16513  074456  000000                           .WORD   0               ;IP12
16514  074460  000000                           .WORD   0               ;IP13
16515  074462  000000                           .WORD   0               ;IP14
16516  074464  000000                           .WORD   0               ;IP15
16517  074466  000000                           .WORD   0               ;IP16
16518  074470  000000                           .WORD   0               ;IP17
16519  074472  000000                           .WORD   0               ;IP20
16520  074474  000000                           .WORD   0               ;IP21
16521  074476  000000                           .WORD   0               ;IP22
16522  074500  000000                           .WORD   0               ;IP23
16523  074502  000000                           .WORD   0               ;IP24
16524
16525                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
16526                                   ;
16527                                   ;       SOURCE LENGTH - 0,1,300
16528                                   ;       SOURCE ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER)
16529                                   ;       SOURCE DATA - CHARACTERS FROM STRING = 001,001,007
16530                                   ;       CHAR - 001,240
16531                                   ;
16532                                   ;TOTAL # OF TEST CONDITIONS = 6
16533                                   ;TOTAL # OF TESTS (1 REG + 1 INLINE)6 = 12
16534                                   ;
```

```
16536                                   ;ENTRY 17 - INSTRUCTION UNDER TEST = SKPC
16537                                   ;
16538  074504  000005                   ISKPC1: .WORD   5               ;INST=SKPC
16539  074506  000001                           .WORD   1               ;TYPE = 1
16540  074510  103436                           .WORD   T1A             ;IP1 - SRC.LEN
16541  074512  104004                           .WORD   T2AA            ;IP2 - SRC.ADR
16542  074514  106242                           .WORD   T25A            ;IP3 - CHAR
16543  074516  104732                           .WORD   T6A             ;IP4 - SRC DATA
16544  074520  103412                           .WORD   T0              ;IP5 - SRC SURR DATA
16545  074522  103412                           .WORD   T0              ;IP6 - SRC.SURR.LEN
16546  074524  103662                           .WORD   TSPA            ;IP7 - SPECIAL HANDLING
16547  074526  000000                           .WORD   0               ;IP10
16548  074530  000000                           .WORD   0               ;IP11
16549  074532  000000                           .WORD   0               ;IP12
16550  074534  000000                           .WORD   0               ;IP13
16551  074536  000000                           .WORD   0               ;IP14
16552  074540  000000                           .WORD   0               ;IP15
16553  074542  000000                           .WORD   0               ;IP16
16554  074544  000000                           .WORD   0               ;IP17
16555  074546  000000                           .WORD   0               ;IP20
16556  074550  000000                           .WORD   0               ;IP21
16557  074552  000000                           .WORD   0               ;IP22
16558  074554  000000                           .WORD   0               ;IP23
16559  074556  000000                           .WORD   0               ;IP24
16560                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
16561                                   ;
16562                                   ;       SOURCE LENGTH - 0,1,2,3,4,5,11,20
16563                                   ;       SOURCE ADDRESS - 200,201
16564                                   ;       CHAR - 007
16565                                   ;       SOURCE DATA - INCREMENTING SEQUENCE; INC=1,START # =0
16566                                   ;
16567                                   ;TOTAL # OF TEST CONDITIONS = 16
16568                                   ;TOTAL # OF TESTS = (1 REG.)16 = 16
16569                                   ;
```

```
16571                                   ;
16572                                   ;ENTRY 18 - INSTRUCTION UNDER TEST = SKPC
16573                                   ;
16574  074560  000005                   ISKPC2: .WORD   5               ;INST=SKPC
16575  074562  000000                           .WORD   0               ;TYPE = 0
16576  074564  100111                           .WORD   100111          ;IP1 - SRC.LEN
16577  074566  000203                           .WORD   203             ;IP2 - SRC.ADR
16578  074570  000003                           .WORD   3               ;IP3 - CHAR
16579  074572  104712                           .WORD   T6+2            ;IP4 - SRC DATA
16580  074574  000000                           .WORD   0               ;IP5 - SRC SURR DATA
16581  074576  000000                           .WORD   0               ;IP6 - SRC.SURR.LEN
16582  074600  000003                           .WORD   3               ;IP7 - SPECIAL HANDLING
16583  074602  000000                           .WORD   0               ;IP10
16584  074604  000000                           .WORD   0               ;IP11
16585  074606  000000                           .WORD   0               ;IP12
16586  074610  000000                           .WORD   0               ;IP13
16587  074612  000000                           .WORD   0               ;IP14
16588  074614  000000                           .WORD   0               ;IP15
16589  074616  000000                           .WORD   0               ;IP16
16590  074620  000000                           .WORD   0               ;IP17
16591  074622  000000                           .WORD   0               ;IP20
16592  074624  000000                           .WORD   0               ;IP21
16593  074626  000000                           .WORD   0               ;IP22
16594  074630  000000                           .WORD   0               ;IP23
16595  074632  000000                           .WORD   0               ;IP24
16596
16597                                   ;THIS TABLE EXERCISE THE FOLLOWING TEST CONDITION:
16598                                   ;
16599                                   ;       SOURCE LENGTH - 100111
16600                                   ;       SOURCE ADDRESS - 203
16601                                   ;       CHAR - 003
16602                                   ;       SOURCE DATA - INCREMENTING SEQUENCE; INC=1, START # = 1.
16603                                   ;
16604                                   ;THIS TEST WAS ADDED TO EXERCISE & TEST THE SKPC V-BIT OPERATION.
16605                                   ;TOTAL # OF TESTS = (1 REG. + 1 INLINE) = 2
16606                                   ;
```

```
16608                                   .SBTTL          MATCHC TABLES
16609                                   ;
16610                                   ;ENTRY 19 - INSTRUCTION UNDER TEST = MATCHC
16611                                   ;
16612  074634  000011                   IMATC:  .WORD 11                ;INST = MATCHC
16613  074636  000003                           .WORD 3                 ;TYPE = 1(BIT 0);11/44 QV TABLE(BIT 1=1)
16614  074640  103726                           .WORD TL1C              ;IP1 - OBJ.LEN
16615  074642  103766                           .WORD T2                ;IP2 - OBJ.ADR
16616  074644  103746                           .WORD TL2C              ;IP3 - SRC.LEN
16617  074646  104342                           .WORD T4I               ;IP4 - SRC.ADR
16618  074650  104660                           .WORD T5                ;IP5 - UNUSED PORTION OF REGISTER 4
16619  074652  106024                           .WORD T20               ;IP6 - OBJ.DATA
16620  074654  103412                           .WORD T0                ;IP7 - OBJ.SURR.DATA
16621  074656  104760                           .WORD T10               ;IP10 - OBJ.SURR.LEN
16622  074660  106024                           .WORD T20               ;IP11 - SRC.DATA
16623  074662  105012                           .WORD T12               ;IP12 - SRC.SURR.DATA
16624  074664  105030                           .WORD T13               ;IP13 - SRC.SURR.LEN
16625  074666  105044                           .WORD T14               ;IP14 - SEPARATION CONSTANT
16626  074670  103412                           .WORD T0                ;IP15 - SPECIAL HANDLING
16627  074672  000000                           .WORD 0                 ;IP16
16628  074674  000000                           .WORD 0                 ;IP17
16629  074676  000000                           .WORD 0                 ;IP20
16630  074700  000000                           .WORD 0                 ;IP21
16631  074702  000000                           .WORD 0                 ;IP22
16632  074704  000000                           .WORD 0                 ;IP23
16633  074706  000000                           .WORD 0                 ;IP24
16634
16635                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
16636                                   ;
16637                                   ;       OBJECT LENGTH - 0,1,300
16638                                   ;       SOURCE LENGTH - 0,1,5
16639                                   ;       OBJECT ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER)
16640                                   ;       SOURCE ADDRESS - NO OVERLAP OF SOURCE & DEST. STRINGS;SOURCE ADD < DEST. ADD
16641                                   ;                        - NO OVERLAP OF SOURCE & DEST. STRINGS;SOURCE ADD > DEST. AD
16642                                   ;                        - SOURCE & DEST. STRINGS ADJACENT; SOURCE ADD < DEST ADD
16643                                   ;                        - SOURCE & DEST. STRINGS ADJACENT; SOURCE ADD > DEST ADD
16644                                   ;                        - SOURCE STRING PARTIALLY OVERLAPS DEST STRING; SRC ADD < DE
16645                                   ;                        - SOURCE STRING PARTIALLY OVERLAPS DEST STRING; SRC ADD > DE
16646                                   ;                        - COMPLETE OVERLAP OF SOURCE AND DEST STRINGS; SOURCE ADD =
16647                                   ;       OBJECT DATA - ALL STRING CHARACTERS IDENTICAL = 127
16648                                   ;       SOURCE DATA - ALL STRING CHARACTERS IDENTICAL = 127
16649                                   ;
16650                                   ;TOTAL # OF TEST CONDITIONS =
16651                                   ;TOTAL # OF TESTS =
16652                                   ;
```

```
16654
16655                                   ;
16656                                   ;ENTRY 21 - INSTRUCTION UNDER TEST = MATCHC
16657                                   ;
16658  074710  000011                   IMATC1: .WORD 11                ;INST = MATCHC
16659  074712  000003                           .WORD 3                 ;TYPE = 1(BIT 0);11/44 QV TABLE(BIT 1=1)
16660  074714  103436                           .WORD T1A               ;IP1 - OBJ.LEN
16661  074716  104004                           .WORD T2AA              ;IP2 - OBJ.ADR
16662  074720  103436                           .WORD T1A               ;IP3 - SRC.LEN
16663  074722  104342                           .WORD T4I               ;IP4 - SRC.ADR
16664  074724  103412                           .WORD T0                ;IP5 - 0
16665  074726  104732                           .WORD T6A               ;IP6 - OBJ.DATA
16666  074730  103412                           .WORD T0                ;IP7 - OBJ.SURR.DATA
16667  074732  103412                           .WORD T0                ;IP10 - OBJ.SURR.LEN
16668  074734  104710                           .WORD T6                ;IP11 - SRC.DATA
16669  074736  103412                           .WORD T0                ;IP12 - SRC.SURR.DATA
16670  074740  103412                           .WORD T0                ;IP13 - SRC.SURR.LEN
16671  074742  105044                           .WORD T14               ;IP14 - SEPARATION CONSTANT
16672  074744  103662                           .WORD TSPA              ;IP15 - SPECIAL HANDLING
16673  074746  000000                           .WORD 0                 ;IP16
16674  074750  000000                           .WORD 0                 ;IP17
16675  074752  000000                           .WORD 0                 ;IP20
16676  074754  000000                           .WORD 0                 ;IP21
16677  074756  000000                           .WORD 0                 ;IP22
16678  074760  000000                           .WORD 0                 ;IP23
16679  074762  000000                           .WORD 0                 ;IP24
16680
16681                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
16682                                   ;
16683                                   ;       OBJECT LENGTH - 0,1,2,3,4,5,11,20
16684                                   ;       SOURCE LENGTH - 0,1,2,3,4,5,11,20
16685                                   ;       OBJECT ADDRESS - 200,201 (RELATIVE TO START OF TEST BUFFER)
16686                                   ;       SOURCE ADDRESS - NO OVERLAP OF SOURCE & DEST. STRINGS;SOURCE ADD < DEST. ADD
16687                                   ;                        - NO OVERLAP OF SOURCE & DEST. STRINGS;SOURCE ADD > DEST. AD
16688                                   ;                        - SOURCE & DEST. STRINGS ADJACENT; SOURCE ADD < DEST ADD
16689                                   ;                        - SOURCE & DEST. STRINGS ADJACENT; SOURCE ADD > DEST ADD
16690                                   ;                        - SOURCE STRING PARTIALLY OVERLAPS DEST STRING; SRC ADD < DE
16691                                   ;                        - SOURCE STRING PARTIALLY OVERLAPS DEST STRING; SRC ADD > DE
16692                                   ;                        - COMPLETE OVERLAP OF SOURCE AND DEST STRINGS; SOURCE ADD =
16693                                   ;       OBJECT DATA - INCREMENTING SEQUENCE; INC=1,START # = 0
16694                                   ;       SOURCE DATA - INCREMENTING SEQUENCE; INC=1; START # = 1
16695                                   ;
16696                                   ;TOTAL # OF TEST CONDITIONS = 896
16697                                   ;TOTAL # OF TESTS = (1 REG.)896 = 896
16698                                   ;
```

```
16700                                   ;
16701                                   ;ENTRY 22 - INSTRUCTION UNDER TEST = MATCHC
16702                                   ;
16703  074764  000011                   IMATC2: .WORD 11                ;INST = MATCHC
16704  074766  000000                           .WORD 0                 ;TYPE = 0
16705  074770  000020                           .WORD 20                ;IP1 - OBJ.LEN
16706  074772  000100                           .WORD 100               ;IP2 - OBJ.ADR
16707  074774  100020                           .WORD 100020            ;IP3 - SRC.LEN
16708  074776  000201                           .WORD 201               ;IP4 - SRC.ADR
16709  075000  000000                           .WORD 0                 ;IP5 - 0
16710  075002  104712                           .WORD T6+2              ;IP6 - OBJ.DATA
16711  075004  000000                           .WORD 0                 ;IP7 - OBJ.SURR.DATA
16712  075006  000000                           .WORD 0                 ;IP10 - OBJ.SURR.LEN
16713  075010  104712                           .WORD T6+2              ;IP11 - SRC.DATA
16714  075012  000000                           .WORD 0                 ;IP12 - SRC.SURR.DATA
16715  075014  000000                           .WORD 0                 ;IP13 - SRC.SURR.LEN
16716  075016  000000                           .WORD 0                 ;IP14 - SEPARATION CONSTANT
16717  075020  000003                           .WORD 3                 ;IP15 - SPECIAL HANDLING
16718  075022  000000                           .WORD 0                 ;IP16
16719  075024  000000                           .WORD 0                 ;IP17
16720  075026  000000                           .WORD 0                 ;IP20
16721  075030  000000                           .WORD 0                 ;IP21
16722  075032  000000                           .WORD 0                 ;IP22
16723  075034  000000                           .WORD 0                 ;IP23
16724  075036  000000                           .WORD 0                 ;IP24
16725
16726                                   ;THIS TABLE EXERCISE THE FOLLOWING TEST CONDITION:
16727                                   ;
16728                                   ;       OBJECT LENGTH - 20
16729                                   ;       SOURCE LENGTH - 100020
16730                                   ;       OBJECT ADDRESS - 100 (RELATIVE TO START OF TEST BUFFER)
16731                                   ;       SOURCE ADDRESS - 201 (RELATIVE TO START OF TEST BUFFER)
16732                                   ;       OBJECT DATA - INCREMENTING SEQUENCE; INC=1, START # = 1
16733                                   ;       SOURCE DATA - INCREMENTING SEQUENCE; INC=1, START # = 1
16734                                   ;
16735                                   ;THIS TEST WAS ADDED TO EXERCISE & TEST THE MATCHC N-BIT OPERATION.
16736                                   ;TOTAL # OF TESTS = (1 REG. + 1 INLINE) = 2
16737                                   ;
```

```
16739                                   .SBTTL          SCANC TABLES
16740
16741                                   ;
16742                                   ;ENTRY 23 - INSTRUCTION UNDER TEST = SCANC
16743                                   ;
16744  075040  000006                   ISCAN:  .WORD 6                 ;INST = SCANC
16745  075042  000003                           .WORD 3                 ;TYPE = 1(BIT 0);11/44 QV TABLE(BIT 1=1)
16746  075044  103726                           .WORD TL1C              ;IP1 - SRC.LEN
16747  075046  103766                           .WORD T2                ;IP2 - SRC.ADR
16748  075050  106266                           .WORD T27               ;IP3 - TABLE LEN (256 BYTES)
16749  075052  106302                           .WORD T30               ;IP4 - MASK
16750  075054  106356                           .WORD T31               ;IP5 - TABLE ADR
16751  075056  104710                           .WORD T6                ;IP6 - SRC.DATA
16752  075060  105012                           .WORD T12               ;IP7 - SRC.SURR DATA
16753  075062  105030                           .WORD T13               ;IP10 - SRC.SURR.LEN
16754  075064  106416                           .WORD T32               ;IP11 - TABLE DATA
16755  075066  104742                           .WORD T7                ;IP12 - TABLE SURR DATA
16756  075070  104760                           .WORD T10               ;IP13 - TABLE SURR LEN
16757  075072  105044                           .WORD T14               ;IP14 - SEPARATION CONSTANT
16758  075074  103412                           .WORD T0                ;IP15 - SPECIAL HANDLING
16759  075076  000000                           .WORD 0                 ;IP16
16760  075100  000000                           .WORD 0                 ;IP17
16761  075102  000000                           .WORD 0                 ;IP20
16762  075104  000000                           .WORD 0                 ;IP21
16763  075106  000000                           .WORD 0                 ;IP22
16764  075110  000000                           .WORD 0                 ;IP23
16765  075112  000000                           .WORD 0                 ;IP24
16766
16767                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
16768                                   ;
16769                                   ;       SOURCE LENGTH - 0,1,300
16770                                   ;       SOURCE ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER)
16771                                   ;       MASK - 0,1,377
16772                                   ;       TABLE ADDRESS - NO OVERLAP WITH SOURCE STRING
16773                                   ;                     - OVERLAP - TABLE ADDRESS=SOURCE ADDRESS
16774                                   ;       SOURCE DATA - INCREMENTING SEQUENCE; INC=1, START # =1
16775                                   ;       TABLE DATA - ALL BYTES IDENTICAL = 0
16776                                   ;                  - ALL BYTES IDENTICAL = 377
16777                                   ;                  - INCREMENTING SEQUENCE; INC=1, START # =1
16778                                   ;
16779                                   ;TOTAL # OF TEST CONDITIONS = 54
16780                                   ;TOTAL # OF TESTS = (1 REG. + 1 INLINE)54=108
16781                                   ;
16782
```

```
16784                                   ;
16785                                   ;ENTRY 24 - INSTRUCTION UNDER TEST = SCANC
16786                                   ;
16787  075114  000006                   ISCAN1: .WORD 6                 ;INST = SCANC
16788  075116  000003                           .WORD 3                 ;TYPE = 1(BIT 0);11/44 QV TABLE(BIT 1=1)
16789  075120  103436                           .WORD T1A               ;IP1 - SRC.LEN
16790  075122  104004                           .WORD T2AA              ;IP2 - SRC.ADR
16791  075124  106266                           .WORD T27               ;IP3 - TABLE LEN (256 BYTES)
16792  075126  106322                           .WORD T30A              ;IP4 - MASK
16793  075130  106330                           .WORD T31A              ;IP5 - TABLE ADR
16794  075132  104732                           .WORD T6A               ;IP6 - SRC.DATA
16795  075134  103412                           .WORD T0                ;IP7 - SRC.SURR DATA
16796  075136  103412                           .WORD T0                ;IP10 - SRC.SURR.LEN
16797  075140  104732                           .WORD T6A               ;IP11 - TABLE DATA
16798  075142  103412                           .WORD T0                ;IP12 - TABLE SURR DATA
16799  075144  103412                           .WORD T0                ;IP13 - TABLE SURR LEN
16800  075146  105044                           .WORD T14               ;IP14 - SEPARATION CONSTANT
16801  075150  103662                           .WORD TSPA              ;IP15 - SPECIAL HANDLING
16802  075152  000000                           .WORD 0                 ;IP16
16803  075154  000000                           .WORD 0                 ;IP17
16804  075156  000000                           .WORD 0                 ;IP20
16805  075160  000000                           .WORD 0                 ;IP21
16806  075162  000000                           .WORD 0                 ;IP22
16807  075164  000000                           .WORD 0                 ;IP23
16808  075166  000000                           .WORD 0                 ;IP24
16809
16810                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
16811                                   ;       SOURCE LENGTH - 0,1,2,3,4,5,11,20
16812                                   ;       SOURCE ADDRESS - 200,201 (RELATIVE TO START OF TEST BUFFER)
16813                                   ;       MASK - 252
16814                                   ;       TABLE ADDRESS - NO OVERLAP WITH SOURCE STRING
16815                                   ;       SOURCE DATA - INCREMENTING SEQUENCE; INC=1,START #=0
16816                                   ;       TABLE DATA - INCREMENTING SEQUENCE;INC=1,START #=0
16817                                   ;
16818                                   ;TOTAL # OF TEST CONDTIONS = 16
16819                                   ;TOTAL # OF TESTS = (1 REG.) = 16
16820                                   ;
```

```
16822                                   ;
16823                                   ;ENTRY 25 - INSTRUCTION UNDER TEST = SCANC
16824                                   ;
16825  075170  000006                   ISCAN2: .WORD 6                 ;INST = SCANC
16826  075172  000000                           .WORD 0                 ;TYPE = 0
16827  075174  100040                           .WORD 100040            ;IP1 - SRC.LEN
16828  075176  000110                           .WORD 110               ;IP2 - SRC.ADR
16829  075200  000256                           .WORD 256               ;IP3 - TABLE LEN (256 BYTES)
16830  075202  000377                           .WORD 377               ;IP4 - MASK
16831  075204  000200                           .WORD 200               ;IP5 - TABLE ADR
16832  075206  104712                           .WORD T6+2              ;IP6 - SRC.DATA
16833  075210  000000                           .WORD 0                 ;IP7 - SRC.SURR DATA
16834  075212  000000                           .WORD 0                 ;IP10 - SRC.SURR.LEN
16835  075214  106424                           .WORD T32+6             ;IP11 - TABLE DATA
16836  075216  000000                           .WORD 0                 ;IP12 - TABLE SURR DATA
16837  075220  000000                           .WORD 0                 ;IP13 - TABLE SURR LEN
16838  075222  000000                           .WORD 0                 ;IP14 - SEPARATION CONSTANT
16839  075224  000003                           .WORD 3                 ;IP15 - SPECIAL HANDLING
16840  075226  000000                           .WORD 0                 ;IP16
16841  075230  000000                           .WORD 0                 ;IP17
16842  075232  000000                           .WORD 0                 ;IP20
16843  075234  000000                           .WORD 0                 ;IP21
16844  075236  000000                           .WORD 0                 ;IP22
16845  075240  000000                           .WORD 0                 ;IP23
16846  075242  000000                           .WORD 0                 ;IP24
16847
16848                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
16849                                   ;
16850                                   ;       SOURCE LENGTH - 100040
16851                                   ;       SOURCE ADDRESS - 10
16852                                   ;       MARK - 377
16853                                   ;       TABLE ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER)
16854                                   ;       SOURCE DATA - INCREMENTING SEQUENCE; INC=1,START#=1
16855                                   ;       TABLE DATA - ALL BYTES IDENTICAL = 377
16856                                   ;
16857                                   ;THIS TEST WAS ADDED TO EXERCISE & TEST THE SCANC N-BIT OPERATION.
16858                                   ;TOTAL # OF TESTS = (1 REG. + 1 INLINE)=2
16859                                   ;
```

```
16861                                   .SBTTL          SPANC TABLES
16862
16863                                   ;
16864                                   ;ENTRY 26 - INSTRUCTION UNDER TEST = SPANC
16865                                   ;
16866  075244  000007                   ISPAN:  .WORD 7                 ;INST = SPANC
16867  075246  000001                           .WORD 1                 ;TYPE = 1
16868  075250  103726                           .WORD TL1C              ;IP1 - SRC.LEN
16869  075252  103766                           .WORD T2                ;IP2 - SRC.ADR
16870  075254  106266                           .WORD T27               ;IP3 - TABLE LEN (256 BYTES)
16871  075256  106302                           .WORD T30               ;IP4 - MASK
16872  075260  106356                           .WORD T31               ;IP5 - TABLE ADR
16873  075262  104710                           .WORD T6                ;IP6 - SRC.DATA
16874  075264  105012                           .WORD T12               ;IP7 - SRC.SURR DATA
16875  075266  105030                           .WORD T13               ;IP10 - SRC.SURR.LEN
16876  075270  106416                           .WORD T32               ;IP11 - TABLE DATA
16877  075272  104742                           .WORD T7                ;IP12 - TABLE SURR DATA
16878  075274  104760                           .WORD T10               ;IP13 - TABLE SURR LEN
16879  075276  105044                           .WORD T14               ;IP14 - SEPARATION CONSTANT
16880  075300  103412                           .WORD T0                ;IP15 - SPECIAL HANDLING
16881  075302  000000                           .WORD 0                 ;IP16
16882  075304  000000                           .WORD 0                 ;IP17
16883  075306  000000                           .WORD 0                 ;IP20
16884  075310  000000                           .WORD 0                 ;IP21
16885  075312  000000                           .WORD 0                 ;IP22
16886  075314  000000                           .WORD 0                 ;IP23
16887  075316  000000                           .WORD 0                 ;IP24
16888
16889                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
16890                                   ;
16891                                   ;       SOURCE LENGTH - 0,1,300
16892                                   ;       SOURCE ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER)
16893                                   ;       MASK - 0,1,377
16894                                   ;       TABLE ADDRESS - NO OVERLAP WITH SOURCE STRING
16895                                   ;                     - OVERLAP - TABLE ADDRESS=SOURCE ADDRESS
16896                                   ;       SOURCE DATA - INCREMENTING SEQUENCE; INC=1, START # =1
16897                                   ;       TABLE DATA - ALL BYTES IDENTICAL = 0
16898                                   ;                  - ALL BYTES IDENTICAL = 377
16899                                   ;                  - INCREMENTING SEQUENCE; INC=1, START # =1
16900                                   ;
16901                                   ;TOTAL # OF TEST CONDITIONS = 54
16902                                   ;TOTAL # OF TESTS = (1 REG. + 1 INLINE)54=108
16903                                   ;
16904
```

```
16906
16907                                   ;
16908                                   ;ENTRY 27 - INSTRUCTION UNDER TEST = SPANC
16909                                   ;
16910  075320  000007                   ISPAN1: .WORD 7                 ;INST = SPANC
16911  075322  000001                           .WORD 1                 ;TYPE = 1
16912  075324  103436                           .WORD T1A               ;IP1 - SRC.LEN
16913  075326  104004                           .WORD T2AA              ;IP2 - SRC.ADR
16914  075330  106266                           .WORD T27               ;IP3 - TABLE LEN (256 BYTES)
16915  075332  106322                           .WORD T30A              ;IP4 - MASK
16916  075334  106330                           .WORD T31A              ;IP5 - TABLE ADR
16917  075336  104732                           .WORD T6A               ;IP6 - SRC.DATA
16918  075340  103412                           .WORD T0                ;IP7 - SRC.SURR DATA
16919  075342  103412                           .WORD T0                ;IP10 - SRC.SURR.LEN
16920  075344  104732                           .WORD T6A               ;IP11 - TABLE DATA
16921  075346  103412                           .WORD T0                ;IP12 - TABLE SURR DATA
16922  075350  103412                           .WORD T0                ;IP13 - TABLE SURR LEN
16923  075352  105044                           .WORD T14               ;IP14 - SEPARATION CONSTANT
16924  075354  103662                           .WORD TSPA              ;IP15 - SPECIAL HANDLING
16925  075356  000000                           .WORD 0                 ;IP16
16926  075360  000000                           .WORD 0                 ;IP17
16927  075362  000000                           .WORD 0                 ;IP20
16928  075364  000000                           .WORD 0                 ;IP21
16929  075366  000000                           .WORD 0                 ;IP22
16930  075370  000000                           .WORD 0                 ;IP23
16931  075372  000000                           .WORD 0                 ;IP24
16932                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
16933                                   ;       SOURCE LENGTH - 0,1,2,3,4,5,11,20
16934                                   ;       SOURCE ADDRESS - 200,201 (RELATIVE TO START OF TEST BUFFER)
16935                                   ;       MASK - 252
16936                                   ;       TABLE ADDRESS - NO OVERLAP WITH SOURCE STRING
16937                                   ;       SOURCE DATA - INCREMENTING SEQUENCE; INC=1,START #=0
16938                                   ;       TABLE DATA - INCREMENTING SEQUENCE;INC=1,START #=0
16939                                   ;
16940                                   ;TOTAL # OF TEST CONDTIONS = 16
16941                                   ;TOTAL # OF TESTS = (1 REG.) = 16
16942                                   ;
```

```
16944                                   ;
16945                                   ;ENTRY 28 - INSTRUCTION UNDER TEST = SPANC
16946                                   ;
16947  075374  000007                   ISPAN2: .WORD 7                 ;INST = SPANC
16948  075376  000000                           .WORD 0                 ;TYPE = 0
16949  075400  100040                           .WORD 100040            ;IP1 - SRC.LEN
16950  075402  000110                           .WORD 110               ;IP2 - SRC.ADR
16951  075404  000256                           .WORD 256               ;IP3 - TABLE LEN (256 BYTES)
16952  075406  000000                           .WORD 0                 ;IP4 - MASK
16953  075410  000200                           .WORD 200               ;IP5 - TABLE ADR
16954  075412  104712                           .WORD T6+2              ;IP6 - SRC.DATA
16955  075414  000000                           .WORD 0                 ;IP7 - SRC.SURR DATA
16956  075416  000000                           .WORD 0                 ;IP10 - SRC.SURR.LEN
16957  075420  106424                           .WORD T32+6             ;IP11 - TABLE DATA
16958  075422  000000                           .WORD 0                 ;IP12 - TABLE SURR DATA
16959  075424  000000                           .WORD 0                 ;IP13 - TABLE SURR LEN
16960  075426  000000                           .WORD 0                 ;IP14 - SEPARATION CONSTANT
16961  075430  000003                           .WORD 3                 ;IP15 - SPECIAL HANDLING
16962  075432  000000                           .WORD 0                 ;IP16
16963  075434  000000                           .WORD 0                 ;IP17
16964  075436  000000                           .WORD 0                 ;IP20
16965  075440  000000                           .WORD 0                 ;IP21
16966  075442  000000                           .WORD 0                 ;IP22
16967  075444  000000                           .WORD 0                 ;IP23
16968  075446  000000                           .WORD 0                 ;IP24
16969
16970                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
16971                                   ;
16972                                   ;       SOURCE LENGTH - 100040
16973                                   ;       SOURCE ADDRESS - 10
16974                                   ;       MARK - 377
16975                                   ;       TABLE ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER)
16976                                   ;       SOURCE DATA - INCREMENTING SEQUENCE; INC=1,START#=1
16977                                   ;       TABLE DATA - ALL BYTES IDENTICAL = 377
16978                                   ;
16979                                   ;THIS TEST WAS ADDED TO EXERCISE & TEST THE SCANC N-BIT OPERATION.
16980                                   ;TOTAL # OF TESTS = (1 REG. + 1 INLINE)=2
16981                                   ;
```

```
16983                                   .SBTTL          CVTPN TABLES
16984
16985                                   ;
16986                                   ;ENTRY 29 - INSTRUCTION UNDER TEST = CVTPN
16987                                   ;
16988  075450  000016                   ICPZ:   .WORD 16                ;INST=CVTPN
16989  075452  000001                           .WORD 1                 ;TYPE = 1
16990  075454  106502                           .WORD T331              ;IP1 - SRC.LEN
16991  075456  103766                           .WORD T2                ;IP2 - SRC.ADR
16992  075460  106522                           .WORD T332              ;IP3 - DST.LEN
16993  075462  106610                           .WORD T34               ;IP4 - DST.ADR
16994  075464  106666                           .WORD T35               ;IP5 - SRC DATA
16995  075466  104742                           .WORD T7                ;IP6 - SRC SURR DATA
16996  075470  104760                           .WORD T10               ;IP7 - SRC SURR LEN
16997  075472  104774                           .WORD T11               ;IP10 - DST DATA
16998  075474  105012                           .WORD T12               ;IP11 - DST SURR DATA
16999  075476  105030                           .WORD T13               ;IP12 - DST SURR LEN
17000  075500  105044                           .WORD T14               ;IP13 - SEPARATION CONSTANT
17001  075502  103412                           .WORD T0                ;IP14 - SPECIAL HANDLING
17002  075504  000000                           .WORD 0                 ;IP15
17003  075506  000000                           .WORD 0                 ;IP16
17004  075510  000000                           .WORD 0                 ;IP17
17005  075512  000000                           .WORD 0                 ;IP20
17006  075514  000000                           .WORD 0                 ;IP21
17007  075516  000000                           .WORD 0                 ;IP22
17008  075520  000000                           .WORD 0                 ;IP23
17009  075522  000000                           .WORD 0                 ;IP24
17010
17011                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
17012                                   ;
17013                                   ;       SOURCE LENGTH - 0,1,37
17014                                   ;       DESTINATION LENGTH - 0,1,37
17015                                   ;       SOURCE ADDRESS - 201 (RELATIVE TO START OF TEST BUFFER)
17016                                   ;       DESTINATION ADDRESS - NO OVERLAP OF SOURCE & DESTINATION STRINGS
17017                                   ;                           - SOURCE & DESTINATION STRINGS ADJACENT
17018                                   ;       SOURCE DATA - ALL DIGITS IDENTICAL = 3; SIGN +
17019                                   ;                   - ALL DIGITS IDENTICAL = 8; SIGN -
17020                                   ;                   - ALL DIGITS IDENTICAL = 0; SIGN -
17021                                   ;
17022                                   ;TOTAL # OF TEST CONDITIONS = 54
17023                                   ;TOTAL # OF TESTS = (2 DATA TYPES + 1 IN LINE)54=162
17024                                   ;
```

```
17026                                   ;ENTRY 30 - INSTRUCTION UNDER TEST = CVTPN
17027                                   ;
17028  075524  000016                   ICPZ1:  .WORD 16                ;INST=CVTPN
17029  075526  000001                           .WORD 1                 ;TYPE = 1
17030  075530  103436                           .WORD T1A               ;IP1 - SRC.LEN
17031  075532  103776                           .WORD T2A               ;IP2 - SRC.ADR
17032  075534  103436                           .WORD T1A               ;IP3 - DST.LEN
17033  075536  106556                           .WORD T34A              ;IP4 - DST.ADR
17034  075540  106754                           .WORD TP19              ;IP5 - SRC DATA
17035  075542  103412                           .WORD T0                ;IP6 - SRC SURR DATA
17036  075544  103412                           .WORD T0                ;IP7 - SRC SURR LEN
17037  075546  103412                           .WORD T0                ;IP10 - DST DATA
17038  075550  103412                           .WORD T0                ;IP11 - DST SURR DATA
17039  075552  103412                           .WORD T0                ;IP12 - DST SURR LEN
17040  075554  105044                           .WORD T14               ;IP13 - SEPARATION CONSTANT
17041  075556  103662                           .WORD TSPA              ;IP14 - SPECIAL HANDLING
17042  075560  000000                           .WORD 0                 ;IP15
17043  075562  000000                           .WORD 0                 ;IP16
17044  075564  000000                           .WORD 0                 ;IP17
17045  075566  000000                           .WORD 0                 ;IP20
17046  075570  000000                           .WORD 0                 ;IP21
17047  075572  000000                           .WORD 0                 ;IP22
17048  075574  000000                           .WORD 0                 ;IP23
17049  075576  000000                           .WORD 0                 ;IP24
17050
17051
17052                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
17053                                   ;
17054                                   ;       SOURCE LENGTH - 0,1,2,3,4,5,11,20
17055                                   ;       DESTINATION LENGTH - 0,1,2,3,4,5,11,20
17056                                   ;       SOURCE ADDRESS - 201 (RELATIVE TO START OF TEST BUFFER)
17057                                   ;       DESTINATION ADDRESS - NO OVERLAP OF SOURCE & DESTINATION STRINGS
17058                                   ;       SOURCE DATA - DIGITS FROM STRING = 12345678912345678912340008912333; SIGN +
17059                                   ;
17060                                   ;TOTAL # OF TEST CONDITIONS = 64
17061                                   ;TOTAL # OF TESTS = (1 REG.)64 = 64
17062                                   ;
```

```
17064                                   .SBTTL          CVTNP TABLES
17065                                   ;ENTRY 31 - INSTRUCTION UNDER TEST = CVTNP
17066                                   ;
17067  075600  000017                   ICZP:   .WORD 17                ;INST=CVTNP
17068  075602  000003                           .WORD 3                 ;TYPE = 1(BIT 0);11/44 QV TABLE(BIT 1=1)
17069  075604  106502                           .WORD T331              ;IP1 - SRC.LEN
17070  075606  103766                           .WORD T2                ;IP2 - SRC.ADR
17071  075610  106522                           .WORD T332              ;IP3 - DST.LEN
17072  075612  107144                           .WORD T36               ;IP4 - DST.ADR
17073  075614  107226                           .WORD T37               ;IP5 - SRC DATA
17074  075616  104742                           .WORD T7                ;IP6 - SRC SURR DATA
17075  075620  104760                           .WORD T10               ;IP7 - SRC SURR LEN
17076  075622  104774                           .WORD T11               ;IP10 - DST DATA
17077  075624  105012                           .WORD T12               ;IP11 - DST SURR DATA
17078  075626  105030                           .WORD T13               ;IP12 - DST SURR LEN
17079  075630  105044                           .WORD T14               ;IP13 - SEPARATION CONSTANT
17080  075632  103412                           .WORD T0                ;IP14 - SPECIAL HANDLING
17081  075634  000000                           .WORD 0                 ;IP15
17082  075636  000000                           .WORD 0                 ;IP16
17083  075640  000000                           .WORD 0                 ;IP17
17084  075642  000000                           .WORD 0                 ;IP20
17085  075644  000000                           .WORD 0                 ;IP21
17086  075646  000000                           .WORD 0                 ;IP22
17087  075650  000000                           .WORD 0                 ;IP23
17088  075652  000000                           .WORD 0                 ;IP24
17089
17090                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
17091                                   ;
17092                                   ;       SOURCE LENGTH - 0,1,37
17093                                   ;       DESTINATION LENGTH - 0,1,37
17094                                   ;       SOURCE ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER)
17095                                   ;       DESTINATION ADDRESS - NO OVERLAP OF SOURCE & DESTINATION STRINGS
17096                                   ;                           - SOURCE & DESTINATION STRINGS ADJACENT
17097                                   ;       SOURCE DATA - ALL DIGITS IDENTICAL = 3; SIGN +; HIGH NIBBLE = 7
17098                                   ;                   - ALL DIGITS IDENTICAL = 8; SIGN -; HIGH NIBBLE = 8
17099                                   ;                   - ALL DIGITS IDENTICAL = 0; SIGN -; HIGH NIBBLE = 1
17100                                   ;
17101                                   ;TOTAL # OF TEST CONDITIONS = 54
17102                                   ;TOTAL # OF TESTS = (6 DATA TYPES + 1 IN LINE)54 = 378
17103                                   ;
```

```
17105                                   ;ENTRY 32 - INSTRUCTION UNDER TEST = CVTNP
17106                                   ;
17107  075654  000017                   ICZP1:  .WORD 17                ;INST=CVTNP
17108  075656  000001                           .WORD 1                 ;TYPE = 1
17109  075660  103436                           .WORD T1A               ;IP1 - SRC.LEN
17110  075662  103776                           .WORD T2A               ;IP2 - SRC.ADR
17111  075664  103436                           .WORD T1A               ;IP3 - DST.LEN
17112  075666  107116                           .WORD T36A              ;IP4 - DST.ADR
17113  075670  107314                           .WORD TZ19              ;IP5 - SRC DATA
17114  075672  103412                           .WORD T0                ;IP6 - SRC SURR DATA
17115  075674  103412                           .WORD T0                ;IP7 - SRC SURR LEN
17116  075676  103412                           .WORD T0                ;IP10 - DST DATA
17117  075700  103412                           .WORD T0                ;IP11 - DST SURR DATA
17118  075702  103412                           .WORD T0                ;IP12 - DST SURR LEN
17119  075704  105044                           .WORD T14               ;IP13 - SEPARATION CONSTANT
17120  075706  103662                           .WORD TSPA              ;IP14 - SPECIAL HANDLING
17121  075710  000000                           .WORD 0                 ;IP15
17122  075712  000000                           .WORD 0                 ;IP16
17123  075714  000000                           .WORD 0                 ;IP17
17124  075716  000000                           .WORD 0                 ;IP20
17125  075720  000000                           .WORD 0                 ;IP21
17126  075722  000000                           .WORD 0                 ;IP22
17127  075724  000000                           .WORD 0                 ;IP23
17128  075726  000000                           .WORD 0                 ;IP24
17129
17130                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
17131                                   ;
17132                                   ;       SOURCE LENGTH - 0,1,2,3,4,5,11,20
17133                                   ;       DESTINATION LENGTH - 0,1,2,3,4,5,11,20
17134                                   ;       SOURCE ADDRESS - 201 (RELATIVE TO START OF TEST BUFFER)
17135                                   ;       DESTINATION ADDRESS - NO OVERLAP OF SOURCE & DESTINATION STRINGS
17136                                   ;       SOURCE DATA - DIGITS FROM STRING= 12345678912345678912340008912333; SIGN +
17137                                   ;
17138                                   ;TOTAL # OF TEST CONDITIONS = 64
17139                                   ;TOTAL # OF TESTS = (1 DATA TYPE IN REG MODE)64 = 64
17140                                   ;
```

```
17142                                   ;ENTRY 32A - INSTRUCTION UNDER TEST = CVTNP
17143                                   ;
17144  075730  000017                   ICZP2:  .WORD 17                ;INST=CVTNP
17145  075732  000001                           .WORD 1                 ;TYPE = 1
17146  075734  103462                           .WORD T1B               ;IP1 - SRC.LEN
17147  075736  104004                           .WORD T2AA              ;IP2 - SRC.ADR
17148  075740  103462                           .WORD T1B               ;IP3 - DST.LEN
17149  075742  107116                           .WORD T36A              ;IP4 - DST.ADR
17150  075744  107314                           .WORD TZ19              ;IP5 - SRC DATA
17151  075746  103412                           .WORD T0                ;IP6 - SRC SURR DATA
17152  075750  103412                           .WORD T0                ;IP7 - SRC SURR LEN
17153  075752  103412                           .WORD T0                ;IP10 - DST DATA
17154  075754  103412                           .WORD T0                ;IP11 - DST SURR DATA
17155  075756  103412                           .WORD T0                ;IP12 - DST SURR LEN
17156  075760  105044                           .WORD T14               ;IP13 - SEPARATION CONSTANT
17157  075762  103412                           .WORD T0                ;IP14 - SPECIAL HANDLING
17158  075764  000000                           .WORD 0                 ;IP15
17159  075766  000000                           .WORD 0                 ;IP16
17160  075770  000000                           .WORD 0                 ;IP17
17161  075772  000000                           .WORD 0                 ;IP20
17162  075774  000000                           .WORD 0                 ;IP21
17163  075776  000000                           .WORD 0                 ;IP22
17164  076000  000000                           .WORD 0                 ;IP23
17165  076002  000000                           .WORD 0                 ;IP24
17166
17167                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
17168                                   ;
17169                                   ;       SOURCE LENGTH - 1,2,3
17170                                   ;       DESTINATION LENGTH - 1,2,3
17171                                   ;       SOURCE ADDRESS - 200,201 (RELATIVE TO START OF TEST BUFFER)
17172                                   ;       DESTINATION ADDRESS - NO OVERLAP OF SOURCE & DESTINATION STRINGS
17173                                   ;       SOURCE DATA - DIGITS FROM STRING= 12345678912345678912340008912333; SIGN +
17174                                   ;
17175                                   ;TOTAL # OF TEST CONDITIONS = 18
17176                                   ;TOTAL # OF TESTS = (6 DATA TYPES + 1 IN LINE)18 = 126
```

```
17178                                   .SBTTL          CVTLP TABLES
17179                                   ;ENTRY 33 - INSTRUCTION UNDER TEST = CVTLP
17180                                   ;
17181  076004  000031                   ICLP:   .WORD 31                ;INST=CVTLP
17182  076006  000003                           .WORD 3                 ;TYPE = 1(BIT 0);11/44 QV TABLE(BIT 1=1)
17183  076010  107372                           .WORD T40               ;IP1 - SRC.HIGH (R2)
17184  076012  107452                           .WORD T41               ;IP2 - SRC.LOW (R3)
17185  076014  106446                           .WORD T33               ;IP3 - DST.LEN (R4)
17186  076016  103766                           .WORD T2                ;IP4 - DST.ADR (R5)
17187  076020  104774                           .WORD T11               ;IP5 - DST DATA
17188  076022  105012                           .WORD T12               ;IP6 - DST SURR DATA
17189  076024  105030                           .WORD T13               ;IP7 - DST SURR LEN
17190  076026  103412                           .WORD T0                ;IP10 - SPECIAL HANDLING
17191  076030  000000                           .WORD 0                 ;IP11
17192  076032  000000                           .WORD 0                 ;IP12
17193  076034  000000                           .WORD 0                 ;IP13
17194  076036  000000                           .WORD 0                 ;IP14
17195  076040  000000                           .WORD 0                 ;IP15
17196  076042  000000                           .WORD 0                 ;IP16
17197  076044  000000                           .WORD 0                 ;IP17
17198  076046  000000                           .WORD 0                 ;IP20
17199  076050  000000                           .WORD 0                 ;IP21
17200  076052  000000                           .WORD 0                 ;IP22
17201  076054  000000                           .WORD 0                 ;IP23
17202  076056  000000                           .WORD 0                 ;IP24
17203                                   ;
17204                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
17205                                   ;
17206                                   ;       DESTINATION LENGTH - 0,1,20
17207                                   ;       DESTINATION ADDRESS - 200 (REATIVE TO START OF BUFFER)
17208                                   ;       SOURCE DATA HIGH - 0+,0-,77777+,77777-,5+
17209                                   ;       SOURCE DATA LOW - 0+,4+,77777-
17210                                   ;
17211                                   ;TOTAL # OF TEST CONDITIONS = 45
17212                                   ;TOTAL # OF TESTS = (2 DATA TYPES + 1 INLINE)45 = 135
17213                                   ;
17214
```

```
17216                                   ;ENTRY 34 - INSTRUCTION UNDER TEST = CVTLP
17217                                   ;
17218  076060  000031                    ICLP1:  .WORD 31                ;INST=CVTLP
17219  076062  000003                            .WORD 3                 ;TYPE = 1(BIT 0);11/44 QV TABLE(BIT 1=1)
17220  076064  107420                            .WORD T40A              ;IP1 - SRC.HIGH (R2)
17221  076066  107436                            .WORD T41A              ;IP2 - SRC.LOW (R3)
17222  076070  103436                            .WORD T1A               ;IP3 - DST.LEN (R4)
17223  076072  103776                            .WORD T2A               ;IP4 - DST.ADR (R5)
17224  076074  103412                            .WORD T0                ;IP5 - DST DATA
17225  076076  103412                            .WORD T0                ;IP6 - DST SURR DATA
17226  076100  103412                            .WORD T0                ;IP7 - DST SURR LEN
17227  076102  103662                            .WORD TSPA              ;IP10 - SPECIAL HANDLING
17228  076104  000000                            .WORD 0                 ;IP11
17229  076106  000000                            .WORD 0                 ;IP12
17230  076110  000000                            .WORD 0                 ;IP13
17231  076112  000000                            .WORD 0                 ;IP14
17232  076114  000000                            .WORD 0                 ;IP15
17233  076116  000000                            .WORD 0                 ;IP16
17234  076120  000000                            .WORD 0                 ;IP17
17235  076122  000000                            .WORD 0                 ;IP20
17236  076124  000000                            .WORD 0                 ;IP21
17237  076126  000000                            .WORD 0                 ;IP22
17238  076130  000000                            .WORD 0                 ;IP23
17239  076132  000000                            .WORD 0                 ;IP24
17240
17241                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
17242                                   ;
17243                                   ;       DESTINATION LENGTH - 0,1,2,3,4,5,11,20
17244                                   ;       DESTINATION ADDRESS - 201
17245                                   ;       SOURCE DATA HIGH - 0+
17246                                   ;       SOURCE DATA LOW - 77777-
17247                                   ;
17248                                   ;TOTAL # OF TEST CONDITIONS = 8
17249                                   ;TOTAL # OF TESTS = (1 DATA TYPE IN REG MODE)8 = 8
17250                                   ;
```

```
17252                                   ;ENTRY 34A - INSTRUCTION UNDER TEST = CVTLP
17253                                   ;
17254  076134  000031                   ICLP2:  .WORD 31                ;INST=CVTLP
17255  076136  000003                           .WORD 3                 ;TYPE = 1(BIT 0);11/44 QV TABLE(BIT 1=1)
17256  076140  107424                           .WORD T40B              ;IP1 - SRC.HIGH (R2)
17257  076142  107472                           .WORD T41B              ;IP2 - SRC.LOW (R3)
17258  076144  105044                           .WORD T14               ;IP3 - DST.LEN (R4)
17259  076146  103766                           .WORD T2                ;IP4 - DST.ADR (R5)
17260  076150  103412                           .WORD T0                ;IP5 - DST DATA
17261  076152  103412                           .WORD T0                ;IP6 - DST SURR DATA
17262  076154  103412                           .WORD T0                ;IP7 - DST SURR LEN
17263  076156  103412                           .WORD T0                ;IP10 - SPECIAL HANDLING
17264  076160  000000                           .WORD 0                 ;IP11
17265  076162  000000                           .WORD 0                 ;IP12
17266  076164  000000                           .WORD 0                 ;IP13
17267  076166  000000                           .WORD 0                 ;IP14
17268  076170  000000                           .WORD 0                 ;IP15
17269  076172  000000                           .WORD 0                 ;IP16
17270  076174  000000                           .WORD 0                 ;IP17
17271  076176  000000                           .WORD 0                 ;IP20
17272  076200  000000                           .WORD 0                 ;IP21
17273  076202  000000                           .WORD 0                 ;IP22
17274  076204  000000                           .WORD 0                 ;IP23
17275  076206  000000                           .WORD 0                 ;IP24
17276
17277                                   ;THIS TABLE EXERCISES THE FOLLOWING TEST CONDITION
17278                                   ;
17279                                   ;       DESTINATION LENGTH - 10
17280                                   ;       DESTINATION ADDRESS - 200
17281                                   ;       SOURCE DATA HIGH - 0,231,252
17282                                   ;       SOURCE DATA LOW - 120360,0,125
17283                                   ;
17284                                   ;TOTAL # OF TEST CONDITIONS = 9
17285                                   ;TOTAL # OF TESTS = (2 DATA TYPES + 1 IN-LINE)9 = 27
17286                                   ;
```

```
17288                                   .SBTTL          CVTLN TABLES
17289                                   ;ENTRY 35 - INSTRUCTION UNDER TEST = CVTLN
17290                                   ;
17291  076210  000021                   ICLZ:   .WORD 21                ;INST=CVTLN
17292  076212  000001                           .WORD 1                 ;TYPE = 1
17293  076214  107372                           .WORD T40               ;IP1 - SRC.HIGH (R2)
17294  076216  107452                           .WORD T41               ;IP2 - SRC.LOW (R3)
17295  076220  106446                           .WORD T33               ;IP3 - DST.LEN (R4)
17296  076222  103766                           .WORD T2                ;IP4 - DST.ADR (R5)
17297  076224  104774                           .WORD T11               ;IP5 - DST DATA
17298  076226  105012                           .WORD T12               ;IP6 - DST SURR DATA
17299  076230  105030                           .WORD T13               ;IP7 - DST SURR LEN
17300  076232  103412                           .WORD T0                ;IP10 - SPECIAL HANDLING
17301  076234  000000                           .WORD 0                 ;IP11
17302  076236  000000                           .WORD 0                 ;IP12
17303  076240  000000                           .WORD 0                 ;IP13
17304  076242  000000                           .WORD 0                 ;IP14
17305  076244  000000                           .WORD 0                 ;IP15
17306  076246  000000                           .WORD 0                 ;IP16
17307  076250  000000                           .WORD 0                 ;IP17
17308  076252  000000                           .WORD 0                 ;IP20
17309  076254  000000                           .WORD 0                 ;IP21
17310  076256  000000                           .WORD 0                 ;IP22
17311  076260  000000                           .WORD 0                 ;IP23
17312  076262  000000                           .WORD 0                 ;IP24
17313                                   ;
17314                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
17315                                   ;
17316                                   ;       DESTINATION LENGTH - 0,1,20
17317                                   ;       DESTINATION ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER(
17318                                   ;       SOURCE DATA HIGH - 0+,0-,77777+,77777-,5+
17319                                   ;       SOURCE DATA LOW - 0+,4+,77777-
17320                                   ;
17321                                   ;TOTAL # OF TEST CONDITIONS = 45
17322                                   ;TOTAL # OF TESTS = (6 DATA TYPES + 1 INLINE)45 = 315
17323                                   ;
```

```
17325                                   ;ENTRY 36 - INSTRUCTION UNDER TEST = CVTLN
17326                                   ;
17327  076264  000021                   ICLZ1:  .WORD 21                ;INST=CVTLN
17328  076266  000001                           .WORD 1                 ;TYPE = 1
17329  076270  107442                           .WORD T40AA             ;IP1 - SRC.HIGH (R2)
17330  076272  107446                           .WORD T41AA             ;IP2 - SRC.LOW (R3)
17331  076274  103436                           .WORD T1A               ;IP3 - DST.LEN (R4)
17332  076276  103776                           .WORD T2A               ;IP4 - DST.ADR (R5)
17333  076300  103412                           .WORD T0                ;IP5 - DST DATA
17334  076302  103412                           .WORD T0                ;IP6 - DST SURR DATA
17335  076304  103412                           .WORD T0                ;IP7 - DST SURR LEN
17336  076306  103662                           .WORD TSPA              ;IP10 - SPECIAL HANDLING
17337  076310  000000                           .WORD 0                 ;IP11
17338  076312  000000                           .WORD 0                 ;IP12
17339  076314  000000                           .WORD 0                 ;IP13
17340  076316  000000                           .WORD 0                 ;IP14
17341  076320  000000                           .WORD 0                 ;IP15
17342  076322  000000                           .WORD 0                 ;IP16
17343  076324  000000                           .WORD 0                 ;IP17
17344  076326  000000                           .WORD 0                 ;IP20
17345  076330  000000                           .WORD 0                 ;IP21
17346  076332  000000                           .WORD 0                 ;IP22
17347  076334  000000                           .WORD 0                 ;IP23
17348  076336  000000                           .WORD 0                 ;IP24
17349
17350                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
17351                                   ;
17352                                   ;       DESTINATION LENGTH - 0,1,2,3,4,5,11,20
17353                                   ;       DESTINATION ADDRESS - 201 (RELATIVE TO START OF TEST BUFFER(
17354                                   ;       SOURCE DATA HIGH - 5+
17355                                   ;       SOURCE DATA LOW - 4+
17356                                   ;
17357                                   ;TOTAL # OF TEST CONDITIONS = 8
17358                                   ;TOTAL # OF TESTS = (1 DATA TYPE IN REG MODE)8 = 8
17359                                   ;
```

```
17361                                   .SBTTL          CVTPL TABLES
17362                                   ;ENTRY 37 - INSTRUCTION UNDER TEST = CVTPL
17363                                   ;
17364  076340  000025                   ICPL:   .WORD 25                ;INST = CVTPL
17365  076342  000003                           .WORD 3                 ;TYPE = 1(BIT 0);11/44 QV TABLE(BIT 1=1)
17366  076344  106446                           .WORD T33               ;IP1 - SRC.LEN (R0)
17367  076346  103766                           .WORD T2                ;IP2 - SRC.ADR (R1)
17368  076350  106666                           .WORD T35               ;IP3 - SRC DATA
17369  076352  104742                           .WORD T7                ;IP4 - SRC SURR DATA
17370  076354  104760                           .WORD T10               ;IP5 - SRC SURR LEN
17371  076356  104660                           .WORD T5                ;IP6- UNUSED PORTION OF REGISTER 4
17372  076360  103412                           .WORD T0                ;IP7 - SPECIAL HANDLING
17373  076362  000000                           .WORD 0                 ;IP10
17374  076364  000000                           .WORD 0                 ;IP11
17375  076366  000000                           .WORD 0                 ;IP12
17376  076370  000000                           .WORD 0                 ;IP13
17377  076372  000000                           .WORD 0                 ;IP14
17378  076374  000000                           .WORD 0                 ;IP15
17379  076376  000000                           .WORD 0                 ;IP16
17380  076400  000000                           .WORD 0                 ;IP17
17381  076402  000000                           .WORD 0                 ;IP20
17382  076404  000000                           .WORD 0                 ;IP21
17383  076406  000000                           .WORD 0                 ;IP22
17384  076410  000000                           .WORD 0                 ;IP23
17385  076412  000000                           .WORD 0                 ;IP24
17386
17387                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
17388                                   ;
17389                                   ;       SOURCE LENGTH - 0,1,20
17390                                   ;       SOURCE ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER)
17391                                   ;       SOURCE DATA - ALL DIGITS IDENTICAL = 3; SIGN +
17392                                   ;                   - ALL DIGITS IDENTICAL = 8; SIGN -
17393                                   ;                   - ALL DIGITS IDENTICAL = 0; SIGN -
17394                                   ;
17395                                   ;TOTAL # OF TEST CONDITIONS = 9
17396                                   ;TOTAL # OF TESTS = (2 DATA TYPES + 1 INLINE)9 = 27
17397                                   ;
```

```
17399
17400                                   ;
17401                                   ;ENTRY 40 - INSTRUCTION UNDER TEST = CVTPL
17402                                   ;
17403  076414  000025                   ICPL1:  .WORD 25                ;INST = CVTPL
17404  076416  000003                           .WORD 3                 ;TYPE = 1(BIT 0);11/44 QV TABLE(BIT 1=1)
17405  076420  106466                           .WORD T33A              ;IP1 - SRC.LEN (R0)
17406  076422  103766                           .WORD T2                ;IP2 - SRC.ADR (R1)
17407  076424  110354                           .WORD T51               ;IP3 - SRC DATA
17408  076426  104742                           .WORD T7                ;IP4 - SRC SURR DATA
17409  076430  104760                           .WORD T10               ;IP5 - SRC SURR LEN
17410  076432  104660                           .WORD T5                ;IP6- UNUSED PORTION OF REGISTER 4
17411  076434  103412                           .WORD T0                ;IP7 - SPECIAL HANDLING
17412  076436  000000                           .WORD 0                 ;IP10
17413  076440  000000                           .WORD 0                 ;IP11
17414  076442  000000                           .WORD 0                 ;IP12
17415  076444  000000                           .WORD 0                 ;IP13
17416  076446  000000                           .WORD 0                 ;IP14
17417  076450  000000                           .WORD 0                 ;IP15
17418  076452  000000                           .WORD 0                 ;IP16
17419  076454  000000                           .WORD 0                 ;IP17
17420  076456  000000                           .WORD 0                 ;IP20
17421  076460  000000                           .WORD 0                 ;IP21
17422  076462  000000                           .WORD 0                 ;IP22
17423  076464  000000                           .WORD 0                 ;IP23
17424  076466  000000                           .WORD 0                 ;IP24
17425
17426                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
17427                                   ;
17428                                   ;       SOURCE LENGTH - 12
17429                                   ;       SOURCE ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER)
17430                                   ;       SOURCE DATA - DIGITS FROM STRING = 2,147,483,648+
17431                                   ;                   - DIGITS FROM STRING = 2,147,483,647+
17432                                   ;                   - DIGITS FROM STRING = 2,147,483,648-
17433                                   ;                   - DIGITS FROM STRING = 2,147,483,649-
17434                                   ;                   - DIGITS FROM STRING = 4,294,967,294+
17435                                   ;                   - DIGITS FROM STRING = 42,949,672,940+
17436                                   ;
17437                                   ;TOTAL # OF TEST CONDITIONS = 6
17438                                   ;TOTAL # OF TESTS = (2 DATA TYPES + 1 INLINE)6 = 18
17439                                   ;
```

```
17441                                   ;ENTRY 41 - INSTRUCTION UNDER TEST = CVTPL
17442                                   ;
17443  076470  000025                    ICPL2:  .WORD 25                ;INST = CVTPL
17444  076472  000003                            .WORD 3                 ;TYPE = 1(BIT 0);11/44 QV TABLE(BIT 1=1)
17445  076474  103436                            .WORD T1A               ;IP1 - SRC.LEN (R0)
17446  076476  103776                            .WORD T2A               ;IP2 - SRC.ADR (R1)
17447  076500  106754                            .WORD TP19              ;IP3 - SRC DATA
17448  076502  103412                            .WORD T0                ;IP4 - SRC SURR DATA
17449  076504  103412                            .WORD T0                ;IP5 - SRC SURR LEN
17450  076506  104660                            .WORD T5                ;IP6- UNUSED PORTION OF REGISTER 4
17451  076510  103662                            .WORD TSPA              ;IP7 - SPECIAL HANDLING
17452  076512  000000                            .WORD 0                 ;IP10
17453  076514  000000                            .WORD 0                 ;IP11
17454  076516  000000                            .WORD 0                 ;IP12
17455  076520  000000                            .WORD 0                 ;IP13
17456  076522  000000                            .WORD 0                 ;IP14
17457  076524  000000                            .WORD 0                 ;IP15
17458  076526  000000                            .WORD 0                 ;IP16
17459  076530  000000                            .WORD 0                 ;IP17
17460  076532  000000                            .WORD 0                 ;IP20
17461  076534  000000                            .WORD 0                 ;IP21
17462  076536  000000                            .WORD 0                 ;IP22
17463  076540  000000                            .WORD 0                 ;IP23
17464  076542  000000                            .WORD 0                 ;IP24
17465
17466                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
17467                                   ;
17468                                   ;       SOURCE LENGTH - 0,1,2,3,4,5,11,20
17469                                   ;       SOURCE ADDRESS - 201 (RELATIVE TO START OF TEST BUFFER)
17470                                   ;       SOURCE DATA - DIGITS FROM STRING = 12345678912345678912340008912333; SIGN +
17471                                   ;
17472                                   ;TOTAL # OF TEST CONDITIONS = 8
17473                                   ;TOTAL # OF TESTS = (1 DATA TYPE IN REG MODE)8 = 8
17474                                   ;
```

```
17476                                   ;ENTRY 41A - INSTRUCTION UNDER TEST = CVTPL
17477                                   ;
17478  076544  000025                   ICPL3:  .WORD 25                ;INST = CVTPL
17479  076546  000003                           .WORD 3                 ;TYPE = 1(BIT 0);11/44 QV TABLE(BIT 1=1)
17480  076550  106466                           .WORD T33A              ;IP1 - SRC.LEN (R0)
17481  076552  103766                           .WORD T2                ;IP2 - SRC.ADR (R1)
17482  076554  106764                           .WORD TP19A             ;IP3 - SRC DATA
17483  076556  103412                           .WORD T0                ;IP4 - SRC SURR DATA
17484  076560  103412                           .WORD T0                ;IP5 - SRC SURR LEN
17485  076562  104660                           .WORD T5                ;IP6- UNUSED PORTION OF REGISTER 4
17486  076564  103412                           .WORD T0                ;IP7 - SPECIAL HANDLING
17487  076566  000000                           .WORD 0                 ;IP10
17488  076570  000000                           .WORD 0                 ;IP11
17489  076572  000000                           .WORD 0                 ;IP12
17490  076574  000000                           .WORD 0                 ;IP13
17491  076576  000000                           .WORD 0                 ;IP14
17492  076600  000000                           .WORD 0                 ;IP15
17493  076602  000000                           .WORD 0                 ;IP16
17494  076604  000000                           .WORD 0                 ;IP17
17495  076606  000000                           .WORD 0                 ;IP20
17496  076610  000000                           .WORD 0                 ;IP21
17497  076612  000000                           .WORD 0                 ;IP22
17498  076614  000000                           .WORD 0                 ;IP23
17499  076616  000000                           .WORD 0                 ;IP24
17500
17501                                   ;THIS TABLE EXERCISES THE FOLLOWING TEST CONDITION
17502                                   ;
17503                                   ;       SOURCE LENGTH - 12
17504                                   ;       SOURCE ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER)
17505                                   ;       SOURCE DATA - 3 X 2 ** 31 = 6442450944 +
17506                                   ;                   - 3 X 2 ** 31 (-) = 6442450944 -
17507                                   ;
17508                                   ;TOTAL # OF TEST CONDITIONS = 2
17509                                   ;TOTAL # OF TESTS = (2 DATA TYPES + 1 IN-LINE) 2 = 6
17510                                   ;
```

```
17512                                   .SBTTL          CVTNL TABLES
17513                                   ;ENTRY 42 - INSTRUCTION UNDER TEST = CVTNL
17514                                   ;
17515  076620  000015                    ICZL:   .WORD 15                ;INST = CVTNL
17516  076622  000001                            .WORD 1                 ;TYPE = 1
17517  076624  106446                            .WORD T33               ;IP1 - SRC.LEN (R0)
17518  076626  103766                            .WORD T2                ;IP2 - SRC.ADR (R1)
17519  076630  107226                            .WORD T37               ;IP3 - SRC DATA
17520  076632  104742                            .WORD T7                ;IP4 - SRC SURR DATA
17521  076634  104760                            .WORD T10               ;IP5 - SRC SURR LEN
17522  076636  104660                            .WORD T5                ;IP6 - UNUSED PORTION OF REGISTER 4
17523  076640  103412                            .WORD T0                ;IP7 - SPECIAL HANDLING
17524  076642  000000                            .WORD 0                 ;IP10
17525  076644  000000                            .WORD 0                 ;IP11
17526  076646  000000                            .WORD 0                 ;IP12
17527  076650  000000                            .WORD 0                 ;IP13
17528  076652  000000                            .WORD 0                 ;IP14
17529  076654  000000                            .WORD 0                 ;IP15
17530  076656  000000                            .WORD 0                 ;IP16
17531  076660  000000                            .WORD 0                 ;IP17
17532  076662  000000                            .WORD 0                 ;IP20
17533  076664  000000                            .WORD 0                 ;IP21
17534  076666  000000                            .WORD 0                 ;IP22
17535  076670  000000                            .WORD 0                 ;IP23
17536  076672  000000                            .WORD 0                 ;IP24
17537
17538                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
17539                                   ;
17540                                   ;       SOURCE LENGTH - 0,1,20
17541                                   ;       SOURCE ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER)
17542                                   ;       SOURCE DATA - ALL DIGITS IDENTICAL = 3; SIGN +; HIGH NIBBLE =7
17543                                   ;                   - ALL DIGITS IDENTICAL = 8; SIGN -; HIGH NIBBLE = 8
17544                                   ;                   - ALL DIGITS IDENTICAL = 0; SIGN -; HIGH NIBBLE = 1
17545                                   ;
17546                                   ;TOTAL # OF TEST CONDITIONS = 9
17547                                   ;TOTAL # OF TESTS = (6 DATA TYPES + 1 INLINE)9 = 63
17548                                   ;
```

```
17550
17551                                   ;
17552                                   ;ENTRY 43 - INSTRUCTION UNDER TEST = CVTNL
17553                                   ;
17554  076674  000015                   ICZL1:  .WORD 15                ;INST = CVTNL
17555  076676  000001                           .WORD 1                 ;TYPE = 1
17556  076700  106466                           .WORD T33A              ;IP1 - SRC.LEN (R0)
17557  076702  103766                           .WORD T2                ;IP2 - SRC.ADR (R1)
17558  076704  110416                           .WORD T52               ;IP3 - SRC DATA
17559  076706  104742                           .WORD T7                ;IP4 - SRC SURR DATA
17560  076710  104760                           .WORD T10               ;IP5 - SRC SURR LEN
17561  076712  104660                           .WORD T5                ;IP6 - UNUSED PORTION OF REGISTER 4
17562  076714  103412                           .WORD T0                ;IP7 - SPECIAL HANDLING
17563  076716  000000                           .WORD 0                 ;IP10
17564  076720  000000                           .WORD 0                 ;IP11
17565  076722  000000                           .WORD 0                 ;IP12
17566  076724  000000                           .WORD 0                 ;IP13
17567  076726  000000                           .WORD 0                 ;IP14
17568  076730  000000                           .WORD 0                 ;IP15
17569  076732  000000                           .WORD 0                 ;IP16
17570  076734  000000                           .WORD 0                 ;IP17
17571  076736  000000                           .WORD 0                 ;IP20
17572  076740  000000                           .WORD 0                 ;IP21
17573  076742  000000                           .WORD 0                 ;IP22
17574  076744  000000                           .WORD 0                 ;IP23
17575  076746  000000                           .WORD 0                 ;IP24
17576
17577                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
17578                                   ;
17579                                   ;       SOURCE LENGTH - 12
17580                                   ;       SOURCE ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER)
17581                                   ;       SOURCE DATA - DIGITS FROM STRING = 2,147,483,648+
17582                                   ;                   - DIGITS FROM STRING = 2,147,483,647+
17583                                   ;                   - DIGITS FROM STRING = 2,147,483,648-
17584                                   ;                   - DIGITS FROM STRING = 2,147,483,649-
17585                                   ;
17586                                   ;TOTAL # OF TEST CONDITIONS = 4
17587                                   ;TOTAL # OF TESTS = (6 DATA TYPES + 1 INLINE)4 = 28
17588                                   ;
```

```
17590                                   ;ENTRY 44 - INSTRUCTION UNDER TEST = CVTNL
17591                                   ;
17592  076750  000015                   ICZL2:  .WORD 15                ;INST = CVTNL
17593  076752  000001                           .WORD 1                 ;TYPE = 1
17594  076754  103436                           .WORD T1A               ;IP1 - SRC.LEN (R0)
17595  076756  103776                           .WORD T2A               ;IP2 - SRC.ADR (R1)
17596  076760  107314                           .WORD TZ19              ;IP3 - SRC DATA
17597  076762  103412                           .WORD T0                ;IP4 - SRC SURR DATA
17598  076764  103412                           .WORD T0                ;IP5 - SRC SURR LEN
17599  076766  104660                           .WORD T5                ;IP6 - UNUSED PORTION OF REGISTER 4
17600  076770  103662                           .WORD TSPA              ;IP7 - SPECIAL HANDLING
17601  076772  000000                           .WORD 0                 ;IP10
17602  076774  000000                           .WORD 0                 ;IP11
17603  076776  000000                           .WORD 0                 ;IP12
17604  077000  000000                           .WORD 0                 ;IP13
17605  077002  000000                           .WORD 0                 ;IP14
17606  077004  000000                           .WORD 0                 ;IP15
17607  077006  000000                           .WORD 0                 ;IP16
17608  077010  000000                           .WORD 0                 ;IP17
17609  077012  000000                           .WORD 0                 ;IP20
17610  077014  000000                           .WORD 0                 ;IP21
17611  077016  000000                           .WORD 0                 ;IP22
17612  077020  000000                           .WORD 0                 ;IP23
17613  077022  000000                           .WORD 0                 ;IP24
17614                                   ;
17615                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
17616                                   ;
17617                                   ;       SOURCE LENGTH - 0,1,2,3,4,5,11,20
17618                                   ;       SOURCE ADDRESS - 201 (RELATIVE TO START OF TEST BUFFER)
17619                                   ;       SOURCE DATA - DIGITS FROM STRING = 12345678912345678912340008912 33; SIGN +
17620                                   ;
17621                                   ;TOTAL # OF TEST CONDITIONS = 8
17622                                   ;TOTAL # OF TESTS = (1 DATA TYPE IN REG MODE)8 = 8
17623                                   ;
```

```
17625                                   .SBTTL          ADDP TABLES
17626                                   ;ENTRY 45 - INSTRUCTION UNDER TEST = ADDP
17627                                   ;
17628  077024  000022                   IADDP:  .WORD   22              ;INST=ADDP
17629  077026  000003                           .WORD 3                 ;TYPE = 1(BIT 0);11/44 QV TABLE(BIT 1=1)
17630  077030  103412                           .WORD   T0              ;IP1 - SRC1.LEN
17631  077032  103766                           .WORD   T2              ;IP2 - SRC1.ADR
17632  077034  103412                           .WORD   T0              ;IP3 - SRC2.LEN
17633  077036  105234                           .WORD   T16             ;IP4 - SRC2.ADR
17634  077040  103416                           .WORD   XT1             ;IP5 - DST.LEN
17635  077042  103412                           .WORD   T0              ;IP6 - DST.ADR - SPECIFIED BY T16 USED FOR IP4
17636  077044  106152                           .WORD   T22             ;IP7 - SRC1 DATA
17637  077046  104742                           .WORD   T7              ;IP10 - SRC1 SURR DATA
17638  077050  104760                           .WORD   T10             ;IP11 - SRC1 SURR LEN
17639  077052  106152                           .WORD   T22             ;IP12 - SRC2 DATA
17640  077054  106024                           .WORD   T20             ;IP13 - SRC2 SURR DATA
17641  077056  103412                           .WORD   T0              ;IP14 - SRC2 SURR LEN  (LENGTH SET TO 0 SO
17642                                                                   ;  AS NOT TO DESTROY ANY OF SRC1)
17643  077060  104774                           .WORD   T11             ;IP15 - DST DATA
17644  077062  105012                           .WORD   T12             ;IP16 - DST SURR DATA
17645  077064  105030                           .WORD   T13             ;IP17 - DST SURR LEN
17646  077066  105044                           .WORD   T14             ;IP20 - SEPARATION CONSTRANT
17647  077070  103412                           .WORD   T0      ;IP21 - SPECIAL HANDLING
17648  077072  000000                           .WORD   0               ;IP22
17649  077074  000000                           .WORD   0               ;IP23
17650  077076  000000                           .WORD   0               ;IP24
17651
17652                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
17653                                   ;
17654                                   ;       SOURCE 1 LENGTH - 0
17655                                   ;       SOURCE 2 LENGTH - 0
17656                                   ;       DESTINATION LENGTH - 0,1,5
17657                                   ;       SOURCE 1 ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER)
17658                                   ;       SOURCE 2 ADDRESS,DEST ADDRESS - NO OVERLAP OF ANY OF THE 3 STRINGS
17659                                   ;                                       - SOURCE 2 STRINGS ALIGNED WITH DESTINATION STRING
17660                                   ;       SOURCE 1 DATA - ALL DIGITS IDENTICAL = 3; SIGN +
17661                                   ;       SOURCE 2 DATA - ALL DIGITS IDENTICAL = 3; SIGNT +
17662                                   ;
17663                                   ;TOTAL # OF TEST CONDITIONS = 6
17664                                   ;TOTAL # OF TESTS = (2 DATA TYPES + 1 INLINE)6 = 18
17665                                   ;
```

```
17667                                   ;ENTRY 46 - INSTRUCTION UNDER TEST = ADDP
17668                                   ;
17669  077100  000022                   IADDP1: .WORD   22              ;INST=ADDP
17670  077102  000001                           .WORD   1               ;TYPE = 1
17671  077104  103412                           .WORD   T0              ;IP1 - SRC1.LEN
17672  077106  103766                           .WORD   T2              ;IP2 - SRC1.ADR
17673  077110  106042                           .WORD   T21             ;IP3 - SRC2.LEN
17674  077112  105234                           .WORD   T16             ;IP4 - SRC2.ADR
17675  077114  103416                           .WORD   XT1             ;IP5 - DST.LEN
17676  077116  103412                           .WORD   T0              ;IP6 - DST.ADR - SPECIFIED BY T16 USED FOR IP4
17677  077120  106152                           .WORD   T22             ;IP7 - SRC1 DATA
17678  077122  104742                           .WORD   T7              ;IP10 - SRC1 SURR DATA
17679  077124  104760                           .WORD   T10             ;IP11 - SRC1 SURR LEN
17680  077126  105750                           .WORD   T17             ;IP12 - SRC2 DATA
17681  077130  106024                           .WORD   T20             ;IP13 - SRC2 SURR DATA
17682  077132  103412                           .WORD   T0              ;IP14 - SRC2 SURR LEN  (LENGTH SET TO 0 SO
17683                                                                   ;  AS NOT TO DESTROY ANY OF SRC1)
17684  077134  104774                           .WORD   T11             ;IP15 - DST DATA
17685  077136  105012                           .WORD   T12             ;IP16 - DST SURR DATA
17686  077140  105030                           .WORD   T13             ;IP17 - DST SURR LEN
17687  077142  105044                           .WORD   T14             ;IP20 - SEPARATION CONSTRANT
17688  077144  103412                           .WORD   T0              ;IP21 - SPECIAL HANDLING
17689  077146  000000                           .WORD   0               ;IP22
17690  077150  000000                           .WORD   0               ;IP23
17691  077152  000000                           .WORD   0               ;IP24
17692
17693                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
17694                                   ;
17695                                   ;       SOURCE 1 LENGTH - 0
17696                                   ;       SOURCE 2 LENGTH - 1,5
17697                                   ;       DESTINATION LENGTH - 0,1,5
17698                                   ;       SOURCE 1 ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER)
17699                                   ;       SOURCE 2 ADDRESS, DEST ADDRESS - NO OVERLAP OF ANY OF THE 3 STRINGS
17700                                   ;                                      - SOURCE 2 STRING ALIGNED WITH DESTINATION STRING
17701                                   ;       SOURCE 1 DATA - ALL DIGITS IDENTICAL = 3; SIGN +
17702                                   ;       SOURCE 2 DATA - DIGTIS FROM STRING = 12345678912345678912340008912333; SIGN +
17703                                   ;                     - ALL DIGITS IDENTICAL = 5; SIGN +
17704                                   ;                     - ALL DIGITS IDENTICAL =3; SIGN -
17705                                   ;                     - ALL DIGITS IDENTICAL = 0; SIGN +
17706                                   ;
17707                                   ;TOTAL # OF TEST CONDITIONS = 48
17708                                   ;TOTAL # OF TESTS = (2 DATA TYPES + 1 INLINE)48 = 144
17709                                   ;
```

```
17711                                   ;ENTRY 47 - INSTRUCTION UNDER TEST = ADDP
17712                                   ;
17713  077154  000022                    IADDP2: .WORD   22              ;INST=ADDP
17714  077156  000001                            .WORD   1               ;TYPE = 1
17715  077160  106042                            .WORD   T21             ;IP1 - SRC1.LEN
17716  077162  103766                            .WORD   T2              ;IP2 - SRC1.ADR
17717  077164  103412                            .WORD   T0              ;IP3 - SRC2.LEN
17718  077166  105234                            .WORD   T16             ;IP4 - SRC2.ADR
17719  077170  103416                            .WORD   XT1             ;IP5 - DST.LEN
17720  077172  103412                            .WORD   T0              ;IP6 - DST.ADR - SPECIFIED BY T16 USED FOR IP4
17721  077174  105750                            .WORD   T17             ;IP7 - SRC1 DATA
17722  077176  104742                            .WORD   T7              ;IP10 - SRC1 SURR DATA
17723  077200  104760                            .WORD   T10             ;IP11 - SRC1 SURR LEN
17724  077202  106152                            .WORD   T22             ;IP12 - SRC2 DATA
17725  077204  106024                            .WORD   T20             ;IP13 - SRC2 SURR DATA
17726  077206  103412                            .WORD   T0              ;IP14 - SRC2 SURR LEN  (LENGTH SET TO 0 SO
17727                                                                   ;  AS NOT TO DESTROY ANY OF SRC1)
17728  077210  104774                            .WORD   T11             ;IP15 - DST DATA
17729  077212  105012                            .WORD   T12             ;IP16 - DST SURR DATA
17730  077214  105030                            .WORD   T13             ;IP17 - DST SURR LEN
17731  077216  105044                            .WORD   T14             ;IP20 - SEPARATION CONSTRANT
17732  077220  103412                            .WORD   T0              ;IP21 - SPECIAL HANDLING
17733  077222  000000                            .WORD   0               ;IP22
17734  077224  000000                            .WORD   0               ;IP23
17735  077226  000000                            .WORD   0               ;IP24
17736
17737                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
17738                                   ;
17739                                   ;       SOURCE 1 LENGTH - 1,5
17740                                   ;       SOURCE 2 LENGTH - 0
17741                                   ;       DESTINATION LENGTH - 0,1,5
17742                                   ;       SOURCE 1 ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER)
17743                                   ;       SOURCE 2 ADDRESS, DEST ADDRESS - NO OVERLAP OF ANY OF THE 3 STRINGS
17744                                   ;                                      - SOURCE 2 STRING ALIGNED WITH DESTINATION STRING
17745                                   ;       SOURCE 1 DATA - DIGITS FROM STRING = 12345678912345678912340008912333; SIGN +
17746                                   ;                     - ALL DIGITS IDENTICAL = 5; SIGN +
17747                                   ;                     - ALL DIGITS IDENTICAL = 3; SIGN -
17748                                   ;                     - ALL DIGITS IDENTICAL = 0; SIGN +
17749                                   ;       SOURCE 2 DATA - ALL DIGITS IDENTICAL = 3; SIGN +
17750                                   ;
17751                                   ;TOTAL # OF TEST CONDITIONS =48
17752                                   ;TOTAL # OF TESTS = (2 DATA TYPES + 1 INLINE)48 = 144
17753                                   ;
```

```
17755                                   ;ENTRY 48 - INSTRUCTION UNDER TEST = ADDP
17756                                   ;
17757  077230  000022                    ;ADDP3: .WORD   22              ;INST=ADDP
17758  077232  000001                            .WORD   1               ;TYPE = 1
17759  077234  106056                            .WORD   T211            ;IP1 - SRC1.LEN
17760  077236  103766                            .WORD   T2              ;IP2 - SRC1.ADR
17761  077240  106074                            .WORD   T212            ;IP3 - SRC2.LEN
17762  077242  105234                            .WORD   T16             ;IP4 - SRC2.ADR
17763  077244  103616                            .WORD   T1?             ;IP5 - DST.LEN
17764  077246  103412                            .WORD   T0              ;IP6 - DST.ADR - SPECIFIED BY T16 USED FOR IP4
17765  077250  105750                            .WORD   T17             ;IP7 - SRC1 DATA
17766  077252  104742                            .WORD   T7              ;IP10 - SRC1 SURR DATA
17767  077254  104760                            .WORD   T10             ;IP11 - SRC1 SURR LEN
17768  077256  105750                            .WORD   T17             ;IP12 - SRC2 DATA
17769  077260  106024                            .WORD   T20             ;IP13 - SRC2 SURR DATA
17770  077262  103412                            .WORD   T0              ;IP14 - SRC2 SURR LEN  (LENGTH SET TO 0 SO
17771                                                                   ;  AS NOT TO DESTROY ANY OF SRC1)
17772  077264  104774                            .WORD   T11             ;IP15 - DST DATA
17773  077266  105012                            .WORD   T12             ;IP16 - DST SURR DATA
17774  077270  105030                            .WORD   T13             ;IP17 - DST SURR LEN
17775  077272  105056                            .WORD   T14A            ;IP20 - SEPARATION CONSTRANT
17776  077274  103412                            .WORD   T0              ;IP21 - SPECIAL HANDLING
17777  077276  000000                            .WORD   0               ;IP22
17778  077300  000000                            .WORD   0               ;IP23
17779  077302  000000                            .WORD   0               ;IP24
17780
17781                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
17782                                   ;
17783                                   ;       SOURCE 1 LENGTH - 1,37
17784                                   ;       SOURCE 2 LENGTH - 1,37
17785                                   ;       DESTINATION LENGTH - 0,1,37
17786                                   ;       SOURCE 1 ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER)
17787                                   ;       SOURCE 2 ADDRESS, DEST ADDRESS - NO OVERLAP OF ANY OF THE 3 STRINGS
17788                                   ;                                      - SOURCE 2 STRING ALIGNED WITH DEST STRING
17789                                   ;       SOURCE 1 DATA - DIGITS FROM STRING = 12345678912345678912340008912 33; SIGN +
17790                                   ;                     - ALL DIGITS IDENTICAL = 5; SIGN +
17791                                   ;                     - ALL DIGITS IDENTICAL = 3; SIGN -
17792                                   ;                     - ALL DIGITS IDENTICAL = 0; SIGN +
17793                                   ;       SOURCE 2 DATA - DIGITS FROM STRING = 12345678912345678912340008912 33; SIGN +
17794                                   ;                     - ALL DIGITS IDENTICAL = 5; SIGN +
17795                                   ;                     - ALL DIGITS IDENTICAL = 3; SIGN -
17796                                   ;                     - ALL DIGITS IDENTICAL = 0; SIGN +
17797                                   ;
17798                                   ;TOTAL # OF TEST CONDITIONS = 384
17799                                   ;TOTAL # OF TESTS = (2 DATA TYPES + 1 INLINE)384 = 1152
17800                                   ;
```

```
17802                                   ;ENTRY 49 - INSTRUCTION UNDER TEST = ADDP
17803                                   ;
17804  077304  000022                   ;ADDP4: .WORD   22              ;INST=ADDP
17805  077306  000003                           .WORD 3                 ;TYPE = 1(BIT 0);11/44 QV TABLE(BIT 1=1)
17806  077310  103436                           .WORD   T1A             ;IP1 - SRC1.LEN
17807  077312  103776                           .WORD   T2A             ;IP2 - SRC1.ADR
17808  077314  103436                           .WORD   T1A             ;IP3 - SRC2.LEN
17809  077316  105116                           .WORD   T16A            ;IP4 - SRC2.ADR
17810  077320  103436                           .WORD   T1A             ;IP5 - DST.LEN
17811  077322  103412                           .WORD   T0              ;IP6 - DST.ADR - SPECIFIED BY T16 USED FOR IP4
17812  077324  106754                           .WORD   TP19            ;IP7 - SRC1 DATA
17813  077326  103412                           .WORD   T0              ;IP10 - SRC1 SURR DATA
17814  077330  103412                           .WORD   T0              ;IP11 - SRC1 SURR LEN
17815  077332  106754                           .WORD   TP19            ;IP12 - SRC2 DATA
17816  077334  103412                           .WORD   T0              ;IP13 - SRC2 SURR DATA
17817  077336  103412                           .WORD   T0              ;IP14 - SRC2 SURR LEN  (LENGTH SET TO 0 SO
17818                                                                   ;  AS NOT TO DESTROY ANY OF SRC1)
17819  077340  103412                           .WORD   T0              ;IP15 - DST DATA
17820  077342  103412                           .WORD   T0              ;IP16 - DST SURR DATA
17821  077344  103412                           .WORD   T0              ;IP17 - DST SURR LEN
17822  077346  105044                           .WORD   T14             ;IP20 - SEPARATION CONSTRANT
17823  077350  103662                           .WORD   TSPA            ;IP21 - SPECIAL HANDLING
17824  077352  000000                           .WORD   0               ;IP22
17825  077354  000000                           .WORD   0               ;IP23
17826  077356  000000                           .WORD   0               ;IP24
17827
17828                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
17829                                   ;
17830                                   ;       SOURCE 1 LENGTH - 0,1,2,3,4,5,11,20
17831                                   ;       SOURCE 2 LENGTH - 0,1,2,3,4,5,11,20
17832                                   ;       DESTINATION LENGTH - 0,1,2,3,4,5,11,20
17833                                   ;       SOURCE 1 ADDRESS - 201 (RELATIVE TO START OF TEST BUFFER)
17834                                   ;       SOURCE 2 ADDRESS,DEST ADDRESS - NO OVERLAP OF ANY OF THE 3 STRINGS
17835                                   ;       SOURCE 1 DATA - DIGITS FROM STRING = 12345678912345678912340008912333; SIGN +
17836                                   ;       SOURCE 2 DATA - DIGITS FROM STRING = 12345678912345678912340008912333; SIGN +
17837                                   ;
17838                                   ;TOTAL # OF TEST CONDITIONS = 512
17839                                   ;TOTAL # OF TESTS = (1 DATA TYPE IN REG MODE)512 = 512
17840                                   ;
```

```
17842                                   .SBTTL          ADDN TABLES
17843                                   ;ENTRY 50 - INSTRUCTION UNDER TEST = ADDN
17844                                   ;
17845  077360  000012                   IADDN:  .WORD   12              ;INST=ADDN
17846  077362  000001                           .WORD   1               ;TYPE = 1
17847  077364  103412                           .WORD   T0              ;IP1 - SRC1.LEN
17848  077366  103766                           .WORD   T2              ;IP2 - SRC1.ADR
17849  077370  103412                           .WORD   T0              ;IP3 - SRC2.LEN
17850  077372  105606                           .WORD   T16Z            ;IP4 - SRC2.ADR
17851  077374  103416                           .WORD   XT1             ;IP5 - DST.LEN
17852  077376  103412                           .WORD   T0              ;IP6 - DST.ADR - SPECIFIED BY T16 USED FOR IP4
17853  077400  107504                           .WORD   T42             ;IP7 - SRC1 DATA
17854  077402  104742                           .WORD   T7              ;IP10 - SRC1 SURR DATA
17855  077404  104760                           .WORD   T10             ;IP11 - SRC1 SURR LEN
17856  077406  107504                           .WORD   T42             ;IP12 - SRC2 DATA
17857  077410  106024                           .WORD   T20             ;IP13 - SRC2 SURR DATA
17858  077412  103412                           .WORD   T0              ;IP14 - SRC2 SURR LEN  (LENGTH SET TO 0 SO
17859                                                                   ;  AS NOT TO DESTROY ANY OF SRC1)
17860  077414  104774                           .WORD   T11             ;IP15 - DST DATA
17861  077416  103412                           .WORD   T0              ;IP16 - DST SURR DATA
17862  077420  103412                           .WORD   T0              ;IP17 - DST SURR LEN
17863  077422  107522                           .WORD   T43             ;IP20 - SEPARATION CONSTRANT
17864  077424  103412                           .WORD   T0              ;IP21 - SPECIAL HANDLING
17865  077426  000000                           .WORD   0               ;IP22
17866  077430  000000                           .WORD   0               ;IP23
17867  077432  000000                           .WORD   0               ;IP24
17868
17869                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
17870                                   ;
17871                                   ;       SOURCE 1 LENGTH - 0
17872                                   ;       SOURCE 2 LENGTH - 0
17873                                   ;       DESTINATION LENGTH - 0,1,5
17874                                   ;       SOURCE 1 ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER)
17875                                   ;       SOURCE 2 ADDRESS,DEST ADDRESS - NO OVERLAP OF ANY OF THE 3 STRINGS
17876                                   ;                                       - SOURCE 2 STRINGS ALIGNED WITH DESTINATION STRING
17877                                   ;       SOURCE 1 DATA - ALL DIGITS IDENTICAL = 9; SIGN +; HIGH NIBBLE = 17
17878                                   ;       SOURCE 2 DATA - ALL DIGITS IDENTICAL = 9; SIGN +; HIGH NIBBLE =17
17879                                   ;
17880                                   ;TOTAL # OF TEST CONDITIONS = 6
17881                                   ;TOTAL # OF TESTS = (6 DATA TYPES + 1 INLINE)6 = 42
17882                                   ;
```

```
17884                                   ;ENTRY 51 - INSTRUCTION UNDER TEST = ADDN
17885                                   ;
17886  077434  000012                    IADDN1: .WORD   12              ;INST=ADDN
17887  077436  000001                            .WORD   1               ;TYPE = 1
17888  077440  103412                            .WORD   T0              ;IP1 - SRC1.LEN
17889  077442  103766                            .WORD   T2              ;IP2 - SRC1.ADR
17890  077444  106042                            .WORD   T21             ;IP3 - SRC2.LEN
17891  077446  105606                            .WORD   T16Z            ;IP4 - SRC2.ADR
17892  077450  103416                            .WORD   XT1             ;IP5 - DST.LEN
17893  077452  103412                            .WORD   T0              ;IP6 - DST.ADR - SPECIFIED BY T16 USED FOR IP4
17894  077454  107504                            .WORD   T42             ;IP7 - SRC1 DATA
17895  077456  104742                            .WORD   T7              ;IP10 - SRC1 SURR DATA
17896  077460  104760                            .WORD   T10             ;IP11 - SRC1 SURR LEN
17897  077462  107226                            .WORD   T37             ;IP12 - SRC2 DATA
17898  077464  106024                            .WORD   T20             ;IP13 - SRC2 SURR DATA
17899  077466  103412                            .WORD   T0              ;IP14 - SRC2 SURR LEN  (LENC,H SET TO 0 SO
17900                                                                   ;  AS NOT TO DESTROY ANY OF SRC1)
17901  077470  104774                            .WORD   T11             ;IP15 - DST DATA
17902  077472  105012                            .WORD   T12             ;IP16 - DST SURR DATA
17903  077474  105030                            .WORD   T13             ;IP17 - DST SURR LEN
17904  077476  105044                            .WORD   T14             ;IP20 - SEPARATION CONSTRANT
17905  077500  103412                            .WORD   T0              ;IP21 - SPECIAL HANDLING
17906  077502  000000                            .WORD   0               ;IP22
17907  077504  000000                            .WORD   0               ;IP23
17908  077506  000000                            .WORD   0               ;IP24
17909
17910                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
17911                                   ;
17912                                   ;       SOURCE 1 LENGTH - 0
17913                                   ;       SOURCE 2 LENGTH - 1,5
17914                                   ;       DESTINATION LENGTH - 0,1,5
17915                                   ;       SOURCE 1 ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER)
17916                                   ;       SOURCE 2 ADDRESS, DEST ADDRESS - NO OVERLAP OF ANY OF THE 3 STRINGS
17917                                   ;                                      - SOURCE 2 STRING ALIGNED WITH DESTINATION STRING
17918                                   ;       SOURCE 1 DATA - ALL DIGITS IDENTICAL = 9; SIGN +; HIGH NIBBLE = 17
17919                                   ;       SOURCE 2 DATA - ALL DIGITS IDENTICAL = 3; SIGN +; HIGH NIBBLE = 7
17920                                   ;                     - ALL DIGITS IDENTICAL =8; SIGN -; HIGH NIBBLE = 8
17921                                   ;                     - ALL DIGITS IDENTICAL = 0; SIGN -; HIGH NIBBLE = 1
17922                                   ;
17923                                   ;TOTAL # OF TEST CONDITIONS = 36
17924                                   ;TOTAL # OF TESTS = (6 DATA TYPES + 1 INLINE)36 = 252
17925                                   ;
```

```
17927                                   ;ENTRY 52 - INSTRUCTION UNDER TEST = ADDN
17928
17929  077510  000012                  IADDN2: .WORD   12              ;INST=ADDN
17930  077512  000001                          .WORD   1               ;TYPE = 1
17931  077514  106042                          .WORD   T21             ;IP1 - SRC1.LEN
17932  077516  103766                          .WORD   T2              ;IP2 - SRC1.ADR
17933  077520  103412                          .WORD   T0              ;IP3 - SRC2.LEN
17934  077522  105606                          .WORD   T16Z            ;IP4 - SRC2.ADR
17935  077524  103416                          .WORD   XT1             ;IP5 - DST.LEN
17936  077526  103412                          .WORD   T0              ;IP6 - DST.ADR - SPECIFIED BY T16 USED FOR IP4
17937  077530  107226                          .WORD   T37             ;IP7 - SRC1 DATA
17938  077532  104742                          .WORD   T7              ;IP10 - SRC1 SURR DATA
17939  077534  104760                          .WORD   T10             ;IP11 - SRC1 SURR LEN
17940  077536  107504                          .WORD   T42             ;IP12 - SRC2 DATA
17941  077540  106024                          .WORD   T20             ;IP13 - SRC2 SURR DATA
17942  077542  103412                          .WORD   T0              ;IP14 - SRC2 SURR LEN  (LENGTH SET TO 0 SO
17943                                                                  ;   AS NOT TO DESTROY ANY OF SRC1)
17944  077544  104774                          .WORD   T11             ;IP15 - DST DATA
17945  077546  105012                          .WORD   T12             ;IP16 - DST SURR DATA
17946  077550  105030                          .WORD   T13             ;IP17 - DST SURR LEN
17947  077552  105044                          .WORD   T14             ;IP20 - SEPARATION CONSTRANT
17948  077554  103412                          .WORD   T0              ;IP21 - SPECIAL HANDLING
17949  077556  000000                          .WORD   0               ;IP22
17950  077560  000000                          .WORD   0               ;IP23
17951  077562  000000                          .WORD   0               ;IP24
17952
17953                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
17954                                   ;
17955                                   ;       SOURCE 1 LENGTH - 1,5
17956                                   ;       SOURCE 2 LENGTH - 0
17957                                   ;       DESTINATION LENGTH - 0,1,5
17958                                   ;       SOURCE 1 ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER)
17959                                   ;       SOURCE 2 ADDRESS, DEST ADDRESS - NO OVERLAP OF ANY OF THE 3 STRINGS
17960                                   ;                                      - SOURCE 2 STRING ALIGNED WITH DESTINATION STRING
17961                                   ;       SOURCE 1 DATA - ALL DIGITS IDENTICAL = 3; SIGN +; HIGH NIBBLE = 7
17962                                   ;                     - ALL DIGITS IDENTICAL = 8; SIGN -; HIGH NIBBLE = 8
17963                                   ;                     - ALL DIGITS IDENTICAL = 0; SIGN -; HIGH NIBBLE = 1
17964                                   ;       SOURCE 2 DATA - ALL DIGITS IDENTICAL = 9; SIGN +; HIGH NIBBLE = 17
17965                                   ;
17966                                   ;TOTAL # OF TEST CONDITIONS = 36
17967                                   ;TOTAL # OF TESTS = (6 DATA TYPES + 1 INLINE)36 = 252
17968                                   ;
```

```
17970                                   ;ENTRY 53 - INSTRUCTION UNDER TEST = ADDN
17971                                   ;
17972  077564  000012                    IADDN3: .WORD   12              ;INST=ADDN
17973  077566  000001                            .WORD   1               ;TYPE = 1
17974  077570  106056                            .WORD   T211            ;IP1 - SRC1.LEN
17975  077572  103766                            .WORD   T2              ;IP2 - SRC1.ADR
17976  077574  106074                            .WORD   T212            ;IP3 - SRC2.LEN
17977  077576  105606                            .WORD   T16Z            ;IP4 - SRC2.ADR
17978  077600  103616                            .WORD   T1?             ;IP5 - DST.LEN
17979  077602  103412                            .WORD   T0              ;IP6 - DST.ADR - SPECIFIED BY T16 USED FOR IP4
17980  077604  107256                            .WORD   T37A            ;IP7 - SRC1 DATA
17981  077606  104742                            .WORD   T7              ;IP10 - SRC1 SURR DATA
17982  077610  104760                            .WORD   T10             ;IP11 - SRC1 SURR LEN
17983  077612  107256                            .WORD   T37A            ;IP12 - SRC2 DATA
17984  077614  106024                            .WORD   T20             ;IP13 - SRC2 SURR DATA
17985  077616  103412                            .WORD   T0              ;IP14 - SRC2 SURR LEN  (LENGTH SET TO 0 SO
17986                                                                   ;  AS NOT TO DESTROY ANY OF SRC1)
17987  077620  104774                            .WORD   T11             ;IP15 - DST DATA
17988  077622  103412                            .WORD   T0              ;IP16 - DST SURR DATA
17989  077624  103412                            .WORD   T0              ;IP17 - DST SURR LEN
17990  077626  107536                            .WORD   T43A            ;IP20 - SEPARATION CONSTRANT
17991  077630  103412                            .WORD   T0              ;IP21 - SPECIAL HANDLING
17992  077632  000000                            .WORD   0               ;IP22
17993  077634  000000                            .WORD   0               ;IP23
17994  077636  000000                            .WORD   0               ;IP24
17995
17996                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
17997                                   ;
17998                                   ;       SOURCE 1 LENGTH - 1,37
17999                                   ;       SOURCE 2 LENGTH - 1,37
18000                                   ;       DESTINATION LENGTH - 0,1,37
18001                                   ;       SOURCE 1 ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER)
18002                                   ;       SOURCE 2 ADDRESS, DEST ADDRESS - NO OVERLAP OF ANY OF THE 3 STRINGS
18003                                   ;                                      - SOURCE 2 STRING ALIGNED WITH DEST STRING
18004                                   ;       SOURCE 1 DATA - ALL DIGITS IDENTICAL = 3; SIGN +; HIGH NIBBLE = 7
18005                                   ;                     - ALL DIGITS IDENTICAL = 8; SIGN -; HIGH NIBBLE = 8
18006                                   ;                     - ALL DIGITS IDENTICAL = 0; SIGN -; HIGH NIBBLE = 1
18007                                   ;                     - DIGITS FROM STRING = 12345678912345678912340008912 33; SIGN +
18008                                   ;       SOURCE 2 DATA - ALL DIGITS IDENTICAL = 3; SIGN +; HIGH NIBBLE = 7
18009                                   ;                     - ALL DIGITS IDENTICAL = 8; SIGN -; HIGH NIBBLE = 8
18010                                   ;                     - ALL DIGITS IDENTICAL = 0; SIGN -; HIGH NIBBLE = 1
18011                                   ;                     - DIGITS FROM STRING = 12345678912345678912340008912 33; SIGN +
18012                                   ;
18013                                   ;TOTAL # OF TEST CONDITIONS = 384
18014                                   ;TOTAL # OF TESTS = (6 DATA TYPES + 1 INLINE)384 = 2688
18015                                   ;
```

```
18017                                   ;ENTRY 54 - INSTRUCTION UNDER TEST = ADDN
18018                                   ;
18019  077640  000012                   ;ADDN4: .WORD   12              ;INST=ADDN
18020  077642  000003                           .WORD 3                 ;TYPE = 1(BIT 0);11/44 QV TABLE(BIT 1=1)
18021  077644  103436                           .WORD   T1A             ;IP1 - SRC1.LEN
18022  077646  103776                           .WORD   T2A             ;IP2 - SRC1.ADR
18023  077650  103436                           .WORD   T1A             ;IP3 - SRC2.LEN
18024  077652  105540                           .WORD   T16ZA           ;IP4 - SRC2.ADR
18025  077654  103436                           .WORD   T1A             ;IP5 - DST.LEN
18026  077656  103412                           .WORD   T0              ;IP6 - DST.ADR - SPECIFIED BY T16 USED FOR IP4
18027  077660  107314                           .WORD   TZ19            ;IP7 - SRC1 DATA
18028  077662  103412                           .WORD   T0              ;IP10 - SRC1 SURR DATA
18029  077664  103412                           .WORD   T0              ;IP11 - SRC1 SURR LEN
18030  077666  107314                           .WORD   TZ19            ;IP12 - SRC2 DATA
18031  077670  103412                           .WORD   T0              ;IP13 - SRC2 SURR DATA
18032  077672  103412                           .WORD   T0              ;IP14 - SRC2 SURR LEN  (LENGTH SET TO 0 SO
18033                                                                   ;  AS NOT TO DESTROY ANY OF SRC1)
18034  077674  103412                           .WORD   T0              ;IP15 - DST DATA
18035  077676  103412                           .WORD   T0              ;IP16 - DST SURR DATA
18036  077700  103412                           .WORD   T0              ;IP17 - DST SURR LEN
18037  077702  105044                           .WORD   T14             ;IP20 - SEPARATION CONSTRANT
18038  077704  103662                           .WORD   TSPA            ;IP21 - SPECIAL HANDLING
18039  077706  000000                           .WORD   0               ;IP22
18040  077710  000000                           .WORD   0               ;IP23
18041  077712  000000                           .WORD   0               ;IP24
18042                                   ;
18043                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
18044                                   ;
18045                                   ;       SOURCE  1 LENGTH - 0,1,2,3,4,5,11,20
18046                                   ;       SOURCE 2 LENGTH - 0,1,2,3,4,5,11,20
18047                                   ;       DESTINATION LENGTH - 0,1,2,3,4,5,11,20
18048                                   ;       SOURCE 1 ADDRESS - 201 (RELATIVE TO START OF TEST BUFFER)
18049                                   ;       SOURCE 2 ADDRESS,DEST ADDRESS - NO OVERLAP OF ANY OF THE 3 STRINGS
18050                                   ;       SOURCE 1 DATA - DIGITS FROM STRING = 12345678912345678912340008912333; SIGN +
18051                                   ;       SOURCE 2 DATA - DIGITS FROM STRING = 12345678912345678912340008912333; SIGN +
18052                                   ;
18053                                   ;TOTAL # OF TEST CONDITIONS = 512
18054                                   ;TOTAL # OF TESTS = (1 DATA TYPE IN REG MODE)512 = 512
18055                                   ;
```

```
18057                                   ;ENTRY 54A - INSTRUCTION UNDER TEST = ADDN
18058                                   ;
18059  077714  000012                   IADDN5: .WORD   12              ;INST=ADDN
18060  077716  000001                           .WORD   1               ;TYPE = 1
18061  077720  103474                           .WORD   T1C             ;IP1 - SRC1.LEN
18062  077722  104004                           .WORD   T2AA            ;IP2 - SRC1.ADR
18063  077724  103474                           .WORD   T1C             ;IP3 - SRC2.LEN
18064  077726  105540                           .WORD   T16ZA           ;IP4 - SRC2.ADR
18065  077730  105044                           .WORD   T14             ;IP5 - DST.LEN
18066  077732  103412                           .WORD   T0              ;IP6 - DST.ADR - SPECIFIED BY T16 USED FOR IP4
18067  077734  107314                           .WORD   TZ19            ;IP7 - SRC1 DATA
18068  077736  103412                           .WORD   T0              ;IP10 - SRC1 SURR DATA
18069  077740  103412                           .WORD   T0              ;IP11 - SRC1 SURR LEN
18070  077742  107314                           .WORD   TZ19            ;IP12 - SRC2 DATA
18071  077744  103412                           .WORD   T0              ;IP13 - SRC2 SURR DATA
18072  077746  103412                           .WORD   T0              ;IP14 - SRC2 SURR LEN  (LENGTH SET TO 0 SO
18073                                                                   ;  AS NOT TO DESTROY ANY OF SRC1)
18074  077750  103412                           .WORD   T0              ;IP15 - DST DATA
18075  077752  103412                           .WORD   T0              ;IP16 - DST SURR DATA
18076  077754  103412                           .WORD   T0              ;IP17 - DST SURR LEN
18077  077756  105044                           .WORD   T14             ;IP20 - SEPARATION CONSTRANT
18078  077760  103412                           .WORD   T0              ;IP21 - SPECIAL HANDLING
18079  077762  000000                           .WORD   0               ;IP22
18080  077764  000000                           .WORD   0               ;IP23
18081  077766  000000                           .WORD   0               ;IP24
18082
18083    .                              ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
18084                                   ;
18085                                   ;       SOURCE  1 LENGTH - 2,4,6
18086                                   ;       SOURCE 2 LENGTH - 2,4,6
18087                                   ;       DESTINATION LENGTH - 10
18088                                   ;       SOURCE 1 ADDRESS - 200,201 (RELATIVE TO START OF TEST BUFFER)
18089                                   ;       SOURCE 2 ADDRESS,DEST ADDRESS - NO OVERLAP OF ANY OF THE 3 STRINGS
18090                                   ;       SOURCE 1 DATA - DIGITS FROM STRING = 12345678912345678912340008912333; SIGN +
18091                                   ;       SOURCE 2 DATA - DIGITS FROM STRING = 12345678912345678912340008912333; SIGN +
18092                                   ;
18093                                   ;TOTAL # OF TEST CONDITIONS = 18
18094                                   ;TOTAL # OF TESTS = (6 DATA TYPES + 1 IN-LINE)18 = 126
18095                                   ;
```

```
18097                                   .SBTTL          SUBP TABLES
18098                                   ;ENTRY 55 - INSTRUCTION UNDER TEST = SUBP
18099                                   ;
18100  077770  000023                   ISUBP:  .WORD   23              ;INST=SUBP
18101  077772  000001                           .WORD   1               ;TYPE = 1
18102  077774  103412                           .WORD   T0              ;IP1 - SRC1.LEN
18103  077776  103766                           .WORD   T2              ;IP2 - SRC1.ADR
18104  100000  103412                           .WORD   T0              ;IP3 - SRC2.LEN
18105  100002  105234                           .WORD   T13             ;IP4 - SRC2.ADR
18106  100004  103416                           .WORD   XT1             ;IP5 - DST.LEN
18107  100006  103412                           .WORD   T0              ;IP6 - DST.ADR - SPECIFIED BY T16 USED FOR IP4
18108  100010  106152                           .WORD   T22             ;IP7 - SRC1 DATA
18109  100012  104742                           .WORD   T7              ;IP10 - SRC1 SURR DATA
18110  100014  104760                           .WORD   T10             ;IP11 - SRC1 SURR LEN
18111  100016  106152                           .WORD   T22             ;IP12 - SRC2 DATA
18112  100020  106024                           .WORD   T20             ;IP13 - SRC2 SURR DATA
18113  100022  103412                           .WORD   T0              ;IP14 - SRC2 SURR LEN  (LENGTH SET TO 0 SO
18114                                                                   ;  AS NOT TO DESTROY ANY OF SRC1)
18115  100024  104774                           .WORD   T11             ;IP15 - DST DATA
18116  100026  105012                           .WORD   T12             ;IP16 - DST SURR DATA
18117  100030  105030                           .WORD   T13             ;IP17 - DST SURR LEN
18118  100032  105044                           .WORD   T14             ;IP20 - SEPARATION CONSTRANT
18119  100034  103412                           .WORD   T0              ;IP21 - SPECIAL HANDLING
18120  100036  000000                           .WORD   0               ;IP22
18121  100040  000000                           .WORD   0               ;IP23
18122  100042  000000                           .WORD   0               ;IP24
18123
18124                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
18125                                   ;
18126                                   ;       SOURCE 1 LENGTH - 0
18127                                   ;       SOURCE 2 LENGTH - 0
18128                                   ;       DESTINATION LENGTH - 0,1,5
18129                                   ;       SOURCE 1 ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER)
18130                                   ;       SOURCE 2 ADDRESS,DEST ADDRESS - NO OVERLAP OF ANY OF THE 3 STRINGS
18131                                   ;                                       - SOURCE 2 STRINGS ALIGNED WITH DESTINATION STRING
18132                                   ;       SOURCE 1 DATA - ALL DIGITS IDENTICAL = 3; SIGN +
18133                                   ;       SOURCE 2 DATA - ALL DIGITS IDENTICAL = 3; SIGNT +
18134                                   ;
18135                                   ;TOTAL # OF TEST CONDITIONS = 6
18136                                   ;TOTAL # OF TESTS = (2 DATA TYPES + 1 INLINE)6 = 18
18137                                   ;
```

```
18139
18140
18141                                   ;
18142                                   ;ENTRY 56 - INSTRUCTION UNDER TEST = SUBP
18143                                   ;
18144  100044  000023                   ;SUBP1: .WORD   23              ;INST=SUBP
18145  100046  000001                   .WORD   1               ;TYPE = 1
18146  100050  103412                   .WORD   T0              ;IP1 - SRC1.LEN
18147  100052  103766                   .WORD   T2              ;IP2 - SRC1.ADR
18148  100054  106042                   .WORD   T21             ;IP3 - SRC2.LEN
18149  100056  105234                   .WORD   T16             ;IP4 - SRC2.ADR
18150  100060  103416                   .WORD   XT1             ;IP5 - DST.LEN
18151  100062  103412                   .WORD   T0              ;IP6 - DST.ADR - SPECIFIED BY T16 USED FOR IP4
18152  100064  106152                   .WORD   T22             ;IP7 - SRC1 DATA
18153  100066  104742                   .WORD   T7              ;IP10 - SRC1 SURR DATA
18154  100070  104760                   .WORD   T10             ;IP11 - SRC1 SURR LEN
18155  100072  105750                   .WORD   T17             ;IP12 - SRC2 DATA
18156  100074  106024                   .WORD   T20             ;IP13 - SRC2 SURR DATA
18157  100076  103412                   .WORD   T0              ;IP14 - SRC2 SURR LEN  (LENGTH SET TO 0 SO
18158                                                           ;  AS NOT TO DESTROY ANY OF SRC1)
18159  100100  104774                   .WORD   T11             ;IP15 - DST DATA
18160  100102  105012                   .WORD   T12             ;IP16 - DST SURR DATA
18161  100104  105030                   .WORD   T13             ;IP17 - DST SURR LEN
18162  100106  105044                   .WORD   T14             ;IP20 - SEPARATION CONSTRANT
18163  100110  103412                   .WORD   T0              ;IP21 - SPECIAL HANDLING
18164  100112  000000                   .WORD   0               ;IP22
18165  100114  000000                   .WORD   0               ;IP23
18166  100116  000000                   .WORD   0               ;IP24
18167
18168                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
18169                                   ;
18170                                   ;       SOURCE 1 LENGTH - 0
18171                                   ;       SOURCE 2 LENGTH - 1,5
18172                                   ;       DESTINATION LENGTH - 0,1,5
18173                                   ;       SOURCE 1 ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER)
18174                                   ;       SOURCE 2 ADDRESS, DEST ADDRESS - NO OVERLAP OF ANY OF THE 3 STRINGS
18175                                   ;                                       - SOURCE 2 STRING ALIGNED WITH DESTINATION STRING
18176                                   ;       SOURCE 1 DATA - ALL DIGITS IDENTICAL = 3; SIGN +
18177                                   ;       SOURCE 2 DATA - DIGTIS FROM STRING = 12345678912345678912340008912 33; SIGN +
18178                                   ;                     - ALL DIGITS IDENTICAL = 5; SIGN +
18179                                   ;                     - ALL DIGITS IDENTICAL =3; SIGN -
18180                                   ;                     - ALL DIGITS IDENTICAL = 0; SIGN +
18181                                   ;
18182                                   ;TOTAL # OF TEST CONDITIONS = 48
18183                                   ;TOTAL # OF TESTS = (2 DATA TYPES + 1 INLINE)48 = 144
                                        ;
```

```
18185                                   ;ENTRY 57 - INSTRUCTION UNDER TEST = SUBP
18186                                   ;
18187  100120  000023                   ISUBP2: .WORD   23              ;INST=SUBP
18188  100122  000001                           .WORD   1               ;TYPE = 1
18189  100124  106042                           .WORD   T21             ;IP1 - SRC1.LEN
18190  100126  103766                           .WORD   T2              ;IP2 - SRC1.ADR
18191  100130  103412                           .WORD   T0              ;IP3 - SRC2.LEN
18192  100132  105234                           .WORD   T16             ;IP4 - SRC2.ADR
18193  100134  103416                           .WORD   XT1             ;IP5 - DST.LEN
18194  100136  103412                           .WORD   T0              ;IP6 - DST.ADR - SPECIFIED BY T16 USED FOR IP4
18195  100140  105750                           .WORD   T17             ;IP7 - SRC1 DATA
18196  100142  104742                           .WORD   T7              ;IP10 - SRC1 SURR DATA
18197  100144  104760                           .WORD   T10             ;IP11 - SRC1 SURR LEN
18198  100146  106152                           .WORD   T22             ;IP12 - SRC2 DATA
18199  100150  106024                           .WORD   T20             ;IP13 - SRC2 SURR DATA
18200  100152  103412                           .WORD   T0              ;IP14 - SRC2 SURR LEN  (LENGTH SET TO 0 SO
18201                                                                   ;  AS NOT TO DESTROY ANY OF SRC1)
18202  100154  104774                           .WORD   T11             ;IP15 - DST DATA
18203  100156  105012                           .WORD   T12             ;IP16 - DST SURR DATA
18204  100160  105030                           .WORD   T13             ;IP17 - DST SURR LEN
18205  100162  105044                           .WORD   T14             ;IP20 - SEPARATION CONSTRANT
18206  100164  103412                           .WORD   T0              ;IP21 - SPECIAL HANDLING
18207  100166  000000                           .WORD   0               ;IP22
18208  100170  000000                           .WORD   0               ;IP23
18209  100172  000000                           .WORD   0               ;IP24
18210
18211                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
18212                                   ;
18213                                   ;       SOURCE 1 LENGTH - 1,5
18214                                   ;       SOURCE 2 LENGTH - 0
18215                                   ;       DESTINATION LENGTH - 0,1,5
18216                                   ;       SOURCE 1 ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER)
18217                                   ;       SOURCE 2 ADDRESS, DEST ADDRESS - NO OVERLAP OF ANY OF THE 3 STRINGS
18218                                   ;                                        - SOURCE 2 STRING ALIGNED WITH DESTINATION STRING
18219                                   ;       SOURCE 1 DATA - DIGITS FROM STRING = 12345678912345678912340008912333; SIGN +
18220                                   ;                     - ALL DIGITS IDENTICAL = 5; SIGN +
18221                                   ;                     - ALL DIGITS IDENTICAL = 3; SIGN -
18222                                   ;                     - ALL DIGITS IDENTICAL = 0; SIGN +
18223                                   ;       SOURCE 2 DATA - ALL DIGITS IDENTICAL = 3; SIGN +
18224                                   ;
18225                                   ;TOTAL # OF TEST CONDITIONS =48
18226                                   ;TOTAL # OF TESTS = (2 DATA TYPES + 1 INLINE)48 = 144
18227                                   ;
```

```
18229                                   ;ENTRY 58 - INSTRUCTION UNDER TEST = SUBP
18230                                   ;
18231  100174  000023                   ISUBP3: .WORD   23              ;INST=SUBP
18232  100176  000001                           .WORD   1               ;TYPE = 1
18233  100200  106056                           .WORD   T211            ;IP1 - SRC1.LEN
18234  100202  103766                           .WORD   T2              ;IP2 - SRC1.ADR
18235  100204  106074                           .WORD   T212            ;IP3 - SRC2.LEN
18236  100206  105234                           .WORD   T16             ;IP4 - SRC2.ADR
18237  100210  103616                           .WORD   T12             ;IP5 - DST.LEN
18238  100212  103412                           .WORD   T0              ;IP6 - DST.ADR - SPECIFIED BY T16 USED FOR IP4
18239  100214  105750                           .WORD   T17             ;IP7 - SRC1 DATA
18240  100216  104742                           .WORD   T7              ;IP10 - SRC1 SURR DATA
18241  100220  104760                           .WORD   T10             ;IP11 - SRC1 SURR LEN
18242  100222  105750                           .WORD   T17             ;IP12 - SRC2 DATA
18243  100224  106024                           .WORD   T20             ;IP13 - SRC2 SURR DATA
18244  100226  103412                           .WORD   T0              ;IP14 - SRC2 SURR LEN  (LENGTH SET TO 0 SO
18245                                                                   ;  AS NOT TO DESTROY ANY OF SRC1)
18246  100230  104774                           .WORD   T11             ;IP15 - DST DATA
18247  100232  105012                           .WORD   T12             ;IP16 - DST SURR DATA
18248  100234  105030                           .WORD   T13             ;IP17 - DST SURR LEN
18249  100236  105056                           .WORD   T14A            ;IP20 - SEPARATION CONSTRANT
18250  100240  103412                           .WORD   T0              ;IP21 - SPECIAL HANDLING
18251  100242  000000                           .WORD   0               ;IP22
18252  100244  000000                           .WORD   0               ;IP23
18253  100246  000000                           .WORD   0               ;IP24
18254
18255                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
18256                                   ;
18257                                   ;       SOURCE 1 LENGTH - 1,37
18258                                   ;       SOURCE 2 LENGTH - 1,37
18259                                   ;       DESTINATION LENGTH - 0,1,37
18260                                   ;       SOURCE 1 ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER)
18261                                   ;       SOURCE 2 ADDRESS, DEST ADDRESS - NO OVERLAP OF ANY OF THE 3 STRINGS
18262                                   ;                                      - SOURCE 2 STRING ALIGNED WITH DEST STRING
18263                                   ;       SOURCE 1 DATA - DIGITS FROM STRING = 12345678912345678912340008912333; SIGN +
18264                                   ;                     - ALL DIGITS IDENTICAL = 5; SIGN +
18265                                   ;                     - ALL DIGITS IDENTICAL = 3; SIGN -
18266                                   ;                     - ALL DIGITS IDENTICAL = 0; SIGN +
18267                                   ;       SOURCE 2 DATA - DIGITS FROM STRING = 12345678912345678912340008912333; SIGN +
18268                                   ;                     - ALL DIGITS IDENTICAL = 5; SIGN +
18269                                   ;                     - ALL DIGITS IDENTICAL = 3; SIGN -
18270                                   ;                     - ALL DIGITS IDENTICAL = 0; SIGN +
18271                                   ;
18272                                   ;TOTAL # OF TEST CONDITIONS = 384
18273                                   ;TOTAL # OF TESTS = (2 DATA TYPES + 1 INLINE)384 = 1152
18274                                   ;
```

```
18276                                   ;ENTRY 59 - INSTRUCTION UNDER TEST = SUBP
18277                                   ;
18278  100250  000023                   ISUBP4: .WORD   23              ;INST=SUBP
18279  100252  000001                           .WORD   1               ;TYPE = 1
18280  100254  103436                           .WORD   T1A             ;IP1 - SRC1.LEN
18281  100256  103776                           .WORD   T2A             ;IP2 - SRC1.ADR
18282  100260  103436                           .WORD   T1A             ;IP3 - SRC2.LEN
18283  100262  105116                           .WORD   T16A            ;IP4 - SRC2.ADR
18284  100264  103436                           .WORD   T1A             ;IP5 - DST.LEN
18285  100266  103412                           .WORD   T0              ;IP6 - DST.ADR - SPECIFIED BY T16 USED FOR IP4
18286  100270  106754                           .WORD   TP19            ;IP7 - SRC1 DATA
18287  100272  103412                           .WORD   T0              ;IP10 - SRC1 SURR DATA
18288  100274  103412                           .WORD   T0              ;IP11 - SRC1 SURR LEN
18289  100276  106754                           .WORD   TP19            ;IP12 - SRC2 DATA
18290  100300  103412                           .WORD   T0              ;IP13 - SRC2 SURR DATA
18291  100302  103412                           .WORD   T0              ;IP14 - SRC2 SURR LEN  (LENGTH SET TO 0 SO
18292                                                                   ;  AS NOT TO DESTROY ANY OF SRC1)
18293  100304  103412                           .WORD   T0              ;IP15 - DST DATA
18294  100306  103412                           .WORD   T0              ;IP16 - DST SURR DATA
18295  100310  103412                           .WORD   T0              ;IP17 - DST SURR LEN
18296  100312  105044                           .WORD   T14             ;IP20 - SEPARATION CONSTRANT
18297  100314  103662                           .WORD   TSPA            ;IP21 - SPECIAL HANDLING
18298  100316  000000                           .WORD   0               ;IP22
18299  100320  000000                           .WORD   0               ;IP23
18300  100322  000000                           .WORD   0               ;IP24
18301
18302                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
18303                                   ;
18304                                   ;       SOURCE 1 LENGTH - 0,1,2,3,4,5,11,20
18305                                   ;       SOURCE 2 LENGTH - 0,1,2,3,4,5,11,20
18306                                   ;       DESTINATION LENGTH - 0,1,2,3,4,5,11,20
18307                                   ;       SOURCE 1 ADDRESS - 201 (RELATIVE TO START OF TEST BUFFER)
18308                                   ;       SOURCE 2 ADDRESS,DEST ADDRESS - NO OVERLAP OF ANY OF THE 3 STRINGS
18309                                   ;       SOURCE 1 DATA - DIGITS FROM STRING = 12345678912345678912340008912333; SIGN +
18310                                   ;       SOURCE 2 DATA - DIGITS FROM STRING = 12345678912345678912340008912333; SIGN +
18311                                   ;
18312                                   ;TOTAL # OF TEST CONDITIONS = 512
18313                                   ;TOTAL # OF TESTS = (1 DATA TYPE IN REG MODE)512 = 512
18314                                   ;
```

```
18316                                   .SBTTL          SUBN TABLES
18317                                   ;ENTRY 60 - INSTRUCTION UNDER TEST = SUBN
18318                                   ;
18319  100324  000013                   ISUBN:  .WORD   13              ;INST=SUBN
18320  100326  000001                           .WORD   1               ;TYPE = 1
18321  100330  103412                           .WORD   T0              ;IP1 - SRC1.LEN
18322  100332  103766                           .WORD   T2              ;IP2 - SRC1.ADR
18323  100334  103412                           .WORD   T0              ;IP3 - SRC2.LEN
18324  100336  105606                           .WORD   T16Z            ;IP4 - SRC2.ADR
18325  100340  103416                           .WORD   XT1             ;IP5 - DST.LEN
18326  100342  103412                           .WORD   T0              ;IP6 - DST.ADR - SPECIFIED BY T16 USED FOR IP4
18327  100344  107504                           .WORD   T42             ;IP7 - SRC1 DATA
18328  100346  104742                           .WORD   T7              ;IP10 - SRC1 SURR DATA
18329  100350  104760                           .WORD   T10             ;IP11 - SRC1 SURR LEN
18330  100352  107504                           .WORD   T42             ;IP12 - SRC2 DATA
18331  100354  106024                           .WORD   T20             ;IP13 - SRC2 SURR DATA
18332  100356  103412                           .WORD   T0              ;IP14 - SRC2 SURR LEN  (LENGTH SET TO 0 SO
18333                                                                   ;  AS NOT TO DESTROY ANY OF SRC1)
18334  100360  104774                           .WORD   T11             ;IP15 - DST DATA
18335  100362  103412                           .WORD   T0              ;IP16 - DST SURR DATA
18336  100364  103412                           .WORD   T0              ;IP17 - DST SURR LEN
18337  100366  107522                           .WORD   T43             ;IP20 - SEPARATION CONSTRANT
18338  100370  103412                           .WORD   T0              ;IP21 - SPECIAL HANDLING
18339  100372  000000                           .WORD   0               ;IP22
18340  100374  000000                           .WORD   0               ;IP23
18341  100376  000000                           .WORD   0               ;IP24
18342
18343                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
18344                                   ;
18345                                   ;       SOURCE 1 LENGTH - 0
18346                                   ;       SOURCE 2 LENGTH - 0
18347                                   ;       DESTINATION LENGTH - 0,1,5
18348                                   ;       SOURCE 1 ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER)
18349                                   ;       SOURCE 2 ADDRESS,DEST ADDRESS - NO OVERLAP OF ANY OF THE 3 STRINGS
18350                                   ;                                       - SOURCE 2 STRINGS ALIGNED WITH DESTINATION STRING
18351                                   ;       SOURCE 1 DATA - ALL DIGITS IDENTICAL = 9; SIGN +; HIGH NIBBLE = 17
18352                                   ;       SOURCE 2 DATA - ALL DIGITS IDENTICAL = 9; SIGN +; HIGH NIBBLE =17
18353                                   ;
18354                                   ;TOTAL # OF TEST CONDITIONS = 6
18355                                   ;TOTAL # OF TESTS = (6 DATA TYPES + 1 INLINE)6 = 42
18356                                   ;
```

```
18358                                   ;ENTRY 61 - INSTRUCTION UNDER TEST = SUBN
18359                                   ;
18360  100400  000013                   ISUBN1: .WORD   13              ;INST=SUBN
18361  100402  000001                           .WORD   1               ;TYPE = 1
18362  100404  103412                           .WORD   T0              ;IP1 - SRC1.LEN
18363  100406  103766                           .WORD   T2              ;IP2 - SRC1.ADR
18364  100410  106042                           .WORD   T21             ;IP3 - SRC2.LEN
18365  100412  105606                           .WORD   T16Z            ;IP4 - SRC2.ADR
18366  100414  103416                           .WORD   XT1             ;IP5 - DST.LEN
18367  100416  103412                           .WORD   T0              ;IP6 - DST.ADR - SPECIFIED BY T16 USED FOR IP4
18368  100420  107504                           .WORD   T42             ;IP7 - SRC1 DATA
18369  100422  104742                           .WORD   T7              ;IP10 - SRC1 SURR DATA
18370  100424  104760                           .WORD   T10             ;IP11 - SRC1 SURR LEN
18371  100426  107226                           .WORD   T37             ;IP12 - SRC2 DATA
18372  100430  106024                           .WORD   T20             ;IP13 - SRC2 SURR DATA
18373  100432  103412                           .WORD   T0              ;IP14 - SRC2 SURR LEN  (LENGTH SET TO 0 SO
18374                                                                   ;  AS NOT TO DESTROY ANY OF SRC1)
18375  100434  104774                           .WORD   T11             ;IP15 - DST DATA
18376  100436  105012                           .WORD   T12             ;IP16 - DST SURR DATA
18377  100440  105030                           .WORD   T13             ;IP17 - DST SURR LEN
18378  100442  105044                           .WORD   T14             ;IP20 - SEPARATION CONSTRANT
18379  100444  103412                           .WORD   T0              ;IP21 - SPECIAL HANDLING
18380  100446  000000                           .WORD   0               ;IP22
18381  100450  000000                           .WORD   0               ;IP23
18382  100452  000000                           .WORD   0               ;IP24
18383
18384                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
18385                                   ;
18386                                   ;       SOURCE 1 LENGTH - 0
18387                                   ;       SOURCE 2 LENGTH - 1,5
18388                                   ;       DESTINATION LENGTH - 0,1,5
18389                                   ;       SOURCE 1 ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER)
18390                                   ;       SOURCE 2 ADDRESS, DEST ADDRESS - NO OVERLAP OF ANY OF THE 3 STRINGS
18391                                   ;                                        - SOURCE 2 STRING ALIGNED WITH DESTINATION STRING
18392                                   ;       SOURCE 1 DATA - ALL DIGITS IDENTICAL = 9; SIGN +; HIGH NIBBLE = 17
18393                                   ;       SOURCE 2 DATA - ALL DIGITS IDENTICAL = 3; SIGN +; HIGH NIBBLE = 7
18394                                   ;                     - ALL DIGITS IDENTICAL =8; SIGN -; HIGH NIBBLE = 8
18395                                   ;                     - ALL DIGITS IDENTICAL = 0; SIGN -; HIGH NIBBLE = 1
18396                                   ;
18397                                   ;TOTAL # OF TEST CONDITIONS = 36
18398                                   ;TOTAL # OF TESTS = (6 DATA TYPES + 1 INLINE)36 = 252
18399                                   ;
```

```
18401
18402
18403                                   ;
18404                                   ;ENTRY 62 - INSTRUCTION UNDER TEST = SUBN
18405                                   ;
18406  100454  000013                   ISUBN2: .WORD   13              ;INST=SUBN
18407  100456  000001                           .WORD   1               ;TYPE = 1
18408  100460  106042                           .WORD   T21             ;IP1 - SRC1.LEN
18409  100462  103766                           .WORD   T2              ;IP2 - SRC1.ADR
18410  100464  103412                           .WORD   T0              ;IP3 - SRC2.LEN
18411  100466  105606                           .WORD   T16Z            ;IP4 - SRC2.ADR
18412  100470  103416                           .WORD   XT1             ;IP5 - DST.LEN
18413  100472  103412                           .WORD   T0              ;IP6 - DST.ADR - SPECIFIED BY T16 USED FOR IP4
18414  100474  107226                           .WORD   T37             ;IP7 - SRC1 DATA
18415  100476  104742                           .WORD   T7              ;IP10 - SRC1 SURR DATA
18416  100500  104760                           .WORD   T10             ;IP11 - SRC1 SURR LEN
18417  100502  107504                           .WORD   T42             ;IP12 - SRC2 DATA
18418  100504  106024                           .WORD   T20             ;IP13 - SRC2 SURR DATA
18419  100506  103412                           .WORD   T0              ;IP14 - SRC2 SURR LEN  (LENGTH SET TO 0 SO
18420                                                                   ;  AS NOT TO DESTROY ANY OF SRC1)
18421  100510  104774                           .WORD   T11             ;IP15 - DST DATA
18422  100512  105012                           .WORD   T12             ;IP16 - DST SURR DATA
18423  100514  105030                           .WORD   T13             ;IP17 - DST SURR LEN
18424  100516  105044                           .WORD   T14             ;IP20 - SEPARATION CONSTRANT
18425  100520  103412                           .WORD   T0              ;IP21 - SPECIAL HANDLING
18426  100522  000000                           .WORD   0               ;IP22
18427  100524  000000                           .WORD   0               ;IP23
18428  100526  000000                           .WORD   0               ;IP24
18429
18430                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
18431                                   ;
18432                                   ;       SOURCE 1 LENGTH - 1,5
18433                                   ;       SOURCE 2 LENGTH - 0
18434                                   ;       DESTINATION LENGTH - 0,1,5
18435                                   ;       SOURCE 1 ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER)
18436                                   ;       SOURCE 2 ADDRESS, DEST ADDRESS - NO OVERLAP OF ANY OF THE 3 STRINGS
18437                                   ;                                        - SOURCE 2 STRING ALIGNED WITH DESTINATION STRING
18438                                   ;       SOURCE 1 DATA - ALL DIGITS IDENTICAL = 3; SIGN +; HIGH NIBBLE = 7
18439                                   ;                     - ALL DIGITS IDENTICAL = 8; SIGN -; HIGH NIBBLE = 8
18440                                   ;                     - ALL DIGITS IDENTICAL = 0; SIGN -; HIGH NIBBLE = 1
18441                                   ;       SOURCE 2 DATA - ALL DIGITS IDENTICAL = 9; SIGN +; HIGH NIBBLE = 17
18442                                   ;
18443                                   ;TOTAL # OF TEST CONDITIONS = 36
18444                                   ;TOTAL # OF TESTS = (6 DATA TYPES + 1 INLINE)36 = 252
                                        ;
```

```
18446                                   ;ENTRY 63 - INSTRUCTION UNDER TEST = SUBN
18447                                   ;
18448  100530  000013                   ISUBN3: .WORD   13              ;INST=SUBN
18449  100532  000001                           .WORD   1               ;TYPE = 1
18450  100534  106056                           .WORD   T211            ;IP1 - SRC1.LEN
18451  100536  103766                           .WORD   T2              ;IP2 - SRC1.ADR
18452  100540  106074                           .WORD   T212            ;IP3 - SRC2.LEN
18453  100542  105606                           .WORD   T16Z            ;IP4 - SRC2.ADR
18454  100544  103616                           .WORD   T1?             ;IP5 - DST.LEN
18455  100546  103412                           .WORD   T0              ;IP6 - DST.ADR - SPECIFIED BY T16 USED FOR IP4
18456  100550  107256                           .WORD   T37A            ;IP7 - SRC1 DATA
18457  100552  104742                           .WORD   T7              ;IP10 - SRC1 SURR DATA
18458  100554  104760                           .WORD   T10             ;IP11 - SRC1 SURR LEN
18459  100556  107256                           .WORD   T37A            ;IP12 - SRC2 DATA
18460  100560  106024                           .WORD   T20             ;IP13 - SRC2 SURR DATA
18461  100562  103412                           .WORD   T0              ;IP14 - SRC2 SURR LEN  (LENGTH SET TO 0 SO
18462                                                                   ;  AS NOT TO DESTROY ANY OF SRC1)
18463  100564  104774                           .WORD   T11             ;IP15 - DST DATA
18464  100566  103412                           .WORD   T0              ;IP16 - DST SURR DATA
18465  100570  103412                           .WORD   T0              ;IP17 - DST SURR LEN
18466  100572  107536                           .WORD   T43A            ;IP20 - SEPARATION CONSTRANT
18467  100574  103412                           .WORD   T0              ;IP21 - SPECIAL HANDLING
18468  100576  000000                           .WORD   0               ;IP22
18469  100600  000000                           .WORD   0               ;IP23
18470  100602  000000                           .WORD   0               ;IP24
18471
18472                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
18473                                   ;
18474                                   ;       SOURCE 1 LENGTH - 1,37
18475                                   ;       SOURCE 2 LENGTH - 1,37
18476                                   ;       DESTINATION LENGTH - 0,1,37
18477                                   ;       SOURCE 1 ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER)
18478                                   ;       SOURCE 2 ADDRESS, DEST ADDRESS - NO OVERLAP OF ANY OF THE 3 STRINGS
18479                                   ;                                      - SOURCE 2 STRING ALIGNED WITH DEST STRING
18480                                   ;       SOURCE 1 DATA - ALL DIGITS IDENTICAL = 3; SIGN +; HIGH NIBBLE = 7
18481                                   ;                     - ALL DIGITS IDENTICAL = 8; SIGN -; HIGH NIBBLE = 8
18482                                   ;                     - ALL DIGITS IDENTICAL = 0; SIGN -; HIGH NIBBLE = 1
18483                                   ;                     - DIGITS FROM STRING = 12345678912345678912340008912 33; SIGN +
18484                                   ;       SOURCE 2 DATA - ALL DIGITS IDENTICAL = 3; SIGN +; HIGH NIBBLE = 7
18485                                   ;                     - ALL DIGITS IDENTICAL = 8; SIGN -; HIGH NIBBLE = 8
18486                                   ;                     - ALL DIGITS IDENTICAL = 0; SIGN -; HIGH NIBBLE = 1
18487                                   ;                     - DIGITS FROM STRING = 12345678912345678912340008912 33; SIGN +
18488                                   ;
18489                                   ;TOTAL # OF TEST CONDITIONS = 384
18490                                   ;TOTAL # OF TESTS = (6 DATA TYPES + 1 INLINE)384 = 2688
18491                                   ;
```

```
18493                                   ;ENTRY 64 - INSTRUCTION UNDER TEST = SUBN
18494                                   ;
18495  100604  000013                    ISUBN4: .WORD   13              ;INST=SUBN
18496  100606  000001                            .WORD   1               ;TYPE = 1
18497  100610  103436                            .WORD   T1A             ;IP1 - SRC1.LEN
18498  100612  103776                            .WORD   T2A             ;IP2 - SRC1.ADR
18499  100614  103436                            .WORD   T1A             ;IP3 - SRC2.LEN
18500  100616  105540                            .WORD   T16ZA           ;IP4 - SRC2.ADR
18501  100620  103436                            .WORD   T1A             ;IP5 - DST.LEN
18502  100622  103412                            .WORD   T0              ;IP6 - DST.ADR - SPECIFIED BY T16 USED FOR IP4
18503  100624  107314                            .WORD   TZ19            ;IP7 - SRC1 DATA
18504  100626  103412                            .WORD   T0              ;IP10 - SRC1 SURR DATA
18505  100630  103412                            .WORD   T0              ;IP11 - SRC1 SURR LEN
18506  100632  107314                            .WORD   TZ19            ;IP12 - SRC2 DATA
18507  100634  103412                            .WORD   T0              ;IP13 - SRC2 SURR DATA
18508  100636  103412                            .WORD   T0              ;IP14 - SRC2 SURR LEN  (LENGTH SET TO 0 SO
18509                                                                   ;  AS NOT TO DESTROY ANY OF SRC1)
18510  100640  103412                            .WORD   T0              ;IP15 - DST DATA
18511  100642  103412                            .WORD   T0              ;IP16 - DST SURR DATA
18512  100644  103412                            .WORD   T0              ;IP17 - DST SURR LEN
18513  100646  105044                            .WORD   T14             ;IP21 - SEPARATION CONSTRANT
18514  100650  103662                            .WORD   TSPA            ;IP21 - SPECIAL HANDLING
18515  100652  000000                            .WORD   0               ;IP22
18516  100654  000000                            .WORD   0               ;IP23
18517  100656  000000                            .WORD   0               ;IP24
18518
18519                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
18520                                   ;
18521                                   ;       SOURCE 1 LENGTH - 0,1,2,3,4,5,11,20
18522                                   ;       SOURCE 2 LENGTH - 0,1,2,3,4,5,11,20
18523                                   ;       DESTINATION LENGTH - 0,1,2,3,4,5,11,20
18524                                   ;       SOURCE 1 ADDRESS - 201 (RELATIVE TO START OF TEST BUFFER)
18525                                   ;       SOURCE 2 ADDRESS,DEST ADDRESS - NO OVERLAP OF ANY OF THE 3 STRINGS
18526                                   ;       SOURCE 1 DATA - DIGITS FROM STRING = 12345678912345678912340008912333; SIGN +
18527                                   ;       SOURCE 2 DATA - DIGITS FROM STRING = 12345678912345678912340008912333; SIGN +
18528                                   ;
18529                                   ;TOTAL # OF TEST CONDITIONS = 512
18530                                   ;TOTAL # OF TESTS = (1 DATA TYPE IN REG MODE)512 = 512
18531                                   ;
```

```
18533                                   .SBTTL          CMPP TABLES
18534                                   ;ENTRY 65 - INSTRUCTION UNDER TEST = CMPP
18535                                   ;
18536  100660  000024                   ICMPP:  .WORD 24                ;INST = CMPP
18537  100662  000003                           .WORD 3                 ;TYPE = 1(BIT 0);11/44 QV TABLE(BIT 1=1)
18538  100664  103412                           .WORD T0                ;IP1 - SRC1.LEN
18539  100666  103766                           .WORD T2                ;IP2 - SRC1.ADR
18540  100670  103412                           .WORD T0                ;IP3 - SRC2.LEN
18541  100672  107604                           .WORD T44               ;IP4 - SRC2.ADR
18542  100674  104660                           .WORD T5                ;IP5 - UNUSED PORTION OF REG. 4
18543  100676  106152                           .WORD T22               ;IP6 - SRC1.DATA
18544  100700  106024                           .WORD T20               ;IP7 - SRC1.SURR.DATA
18545  100702  103412                           .WORD T0                ;IP10 - SRC1.SURR.LEN
18546  100704  106152                           .WORD T22               ;IP11 - SRC2.DATA
18547  100706  104742                           .WORD T7                ;IP12 - SRC2.SURR.DATA
18548  100710  104760                           .WORD T10               ;IP13 - SRC2.SURR.LEN
18549  100712  107522                           .WORD T43               ;IP14 - SEPARATION CONSTANT
18550  100714  103412                           .WORD T0                ;IP15 - SPECIAL HANDLING
18551  100716  000000                           .WORD 0                 ;IP16
18552  100720  000000                           .WORD 0                 ;IP17
18553  100722  000000                           .WORD 0                 ;IP20
18554  100724  000000                           .WORD 0                 ;IP21
18555  100726  000000                           .WORD 0                 ;IP22
18556  100730  000000                           .WORD 0                 ;IP23
18557  100732  000000                           .WORD 0                 ;IP24
18558                                   ;
18559                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
18560                                   ;
18561                                   ;       SOURCE 1 LENGTH - 0
18562                                   ;       SOURCE 2 LENGTH - 0
18563                                   ;       SOURCE 1 ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER)
18564                                   ;       SOURCE 2 ADDRESS - NO OVERLAP OF STRINGS
18565                                   ;                         - ALIGNED SOURCE 1 - SOURCE 2 STRINGS
18566                                   ;       SOURCE 1 DATA - ALL DIGITS IDENTICAL = 3; SIGN +
18567                                   ;       SOURCE 2 DATA - ALL DIGITS IDENTICAL = 3; SIGN +
18568                                   ;
18569                                   ;TOTAL # OF TEST CONDITIONS = 2
18570                                   ;TOTAL # OF TESTS = (2 DATA TYPES + 1 INLINE)2 = 6
18571                                   ;
```

```
18573
18574                                   ;ENTRY 66 - INSTRUCTION UNDER TEST = CMPP
18575                                   ;
18576  100734  000024                   ICMPP1: .WORD 24                ;INST = CMPP
18577  100736  000001                           .WORD 1                 ;TYPE = 1
18578  100740  103412                           .WORD T0                ;IP1 - SRC1.LEN
18579  100742  103766                           .WORD T2                ;IP2 - SRC1.ADR
18580  100744  106042                           .WORD T21               ;IP3 - SRC2.LEN
18581  100746  107604                           .WORD T44               ;IP4 - SRC2.ADR
18582  100750  104660                           .WORD T5                ;IP5 - UNUSED PORTION OF REG. 4
18583  100752  106152                           .WORD T22               ;IP6 - SRC1.DATA
18584  100754  106024                           .WORD T20               ;IP7 - SRC1.SURR.DATA
18585  100756  103412                           .WORD T0                ;IP10 - SRC1.SURR.LEN
18586  100760  107724                           .WORD T45               ;IP11 - SRC2.DATA
18587  100762  104742                           .WORD T7                ;IP12 - SRC2.SURR.DATA
18588  100764  104760                           .WORD T10               ;IP13 - SRC2.SURR.LEN
18589  100766  107522                           .WORD T43               ;IP14 - SEPARATION CONSTANT
18590  100770  103412                           .WORD T0                ;IP15 - SPECIAL HANDLING
18591  100772  000000                           .WORD 0                 ;IP16
18592  100774  000000                           .WORD 0                 ;IP17
18593  100776  000000                           .WORD 0                 ;IP20
18594  101000  000000                           .WORD 0                 ;IP21
18595  101002  000000                           .WORD 0                 ;IP22
18596  101004  000000                           .WORD 0                 ;IP23
18597  101006  000000                           .WORD 0                 ;IP24
18598
18599                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
18600                                   ;
18601                                   ;       SOURCE 1 LENGTH - 0
18602                                   ;       SOURCE 2 LENGTH - 1,5
18603                                   ;       SOURCE 1 ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER)
18604                                   ;       SOURCE 2 ADDRESS - NO OVERLAP OF THE STRINGS
18605                                   ;       SOURCE 1 DATA - ALL DIGITS IDENTICAL = 3; SIGN +
18606                                   ;       SOURCE 2 DATA - ALL DIGITS IDENTICAL = 3; SIGN +
18607                                   ;                     - ALL DIGITS IDENTICAL = 3; SIGN -
18608                                   ;                     - ALL DIGITS IDENTICAL = 0; SIGN +
18609                                   ;                     - ALL DIGITS IDENTICAL = 0; SIGN -
18610                                   ;
18611                                   ;TOTAL # OF TEST CONDITIONS = 8
18612                                   ;TOTAL # OF TESTS = (2 DATA TYPES + 1 INLINE)8 = 24
18613                                   ;
```

```
18615
18616                                   ;ENTRY 67 - INSTRUCTION UNDER TEST = CMPP
18617                                   ;
18618  101010  000024                   ICMPP2: .WORD 24                ;INST = CMPP
18619  101012  000001                           .WORD 1                 ;TYPE = 1
18620  101014  106042                           .WORD T21               ;IP1 - SRC1.LEN
18621  101016  103766                           .WORD T2                ;IP2 - SRC1.ADR
18622  101020  103412                           .WORD T0                ;IP3 - SRC2.LEN
18623  101022  107604                           .WORD T44               ;IP4 - SRC2.ADR
18624  101024  104660                           .WORD T5                ;IP5 - UNUSED PORTION OF REG. 4
18625  101026  107724                           .WORD T45               ;IP6 - SRC1.DATA
18626  101030  106024                           .WORD T20               ;IP7 - SRC1.SURR.DATA
18627  101032  103412                           .WORD T0                ;IP10 - SRC1.SURR.LEN
18628  101034  106152                           .WORD T22               ;IP11 - SRC2.DATA
18629  101036  104742                           .WORD T7                ;IP12 - SRC2.SURR.DATA
18630  101040  104760                           .WORD T10               ;IP13 - SRC2.SURR.LEN
18631  101042  107522                           .WORD T43               ;IP14 - SEPARATION CONSTANT
18632  101044  103412                           .WORD T0                ;IP15 - SPECIAL HANDLING
18633  101046  000000                           .WORD 0                 ;IP16
18634  101050  000000                           .WORD 0                 ;IP17
18635  101052  000000                           .WORD 0                 ;IP20
18636  101054  000000                           .WORD 0                 ;IP21
18637  101056  000000                           .WORD 0                 ;IP22
18638  101060  000000                           .WORD 0                 ;IP23
18639  101062  000000                           .WORD 0                 ;IP24
18640
18641                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
18642                                   ;
18643                                   ;       SOURCE 1 LENGTH - 1,5
18644                                   ;       SOURCE 2 LENGTH - 0
18645                                   ;       SOURCE 1 ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER)
18646                                   ;       SOURCE 2 ADDRESS - NO OVERLAP OF STRINGS
18647                                   ;       SOURCE 1 DATA - ALL DIGITS IDENTICAL = 3; SIGN +
18648                                   ;                     - ALL DIGITS IDENTICAL = 3; SIGN -
18649                                   ;                     - ALL DIGITS IDENTICAL = 0; SIGN +
18650                                   ;                     - ALL DIGITS IDENTICAL = 0; SIGN -
18651                                   ;       SOURCE 2 DATA - ALL DIGITS IDENTICAL = 3; SIGN +
18652                                   ;
18653                                   ;TOTAL # OF TEST CONDITIONS =8
18654                                   ;TOTAL # OF TESTS = (2 DATA TYPES + 1 INLINE)8 = 24
18655                                   ;
```

```
18657
18658                                   ;ENTRY 68 - INSTRUCTION UNDER TEST = CMPP
18659                                   ;
18660  101064  000024                   ICMPP3: .WORD 24                ;INST = CMPP
18661  101066  000001                           .WORD 1                 ;TYPE = 1
18662  101070  106056                           .WORD T211              ;IP1 - SRC1.LEN
18663  101072  103766                           .WORD T2                ;IP2 - SRC1.ADR
18664  101074  106074                           .WORD T212              ;IP3 - SRC2.LEN
18665  101076  107604                           .WORD T44               ;IP4 - SRC2.ADR
18666  101100  104660                           .WORD T5                ;IP5 - UNUSED PORTION OF REG. 4
18667  101102  107724                           .WORD T45               ;IP6 - SRC1.DATA
18668  101104  106024                           .WORD T20               ;IP7 - SRC1.SURR.DATA
18669  101106  103412                           .WORD T0                ;IP10 - SRC1.SURR.LEN
18670  101110  107724                           .WORD T45               ;IP11 - SRC2.DATA
18671  101112  104742                           .WORD T7                ;IP12 - SRC2.SURR.DATA
18672  101114  104760                           .WORD T10               ;IP13 - SRC2.SURR.LEN
18673  101116  107522                           .WORD T43               ;IP14 - SEPARATION CONSTANT
18674  101120  103412                           .WORD T0                ;IP15 - SPECIAL HANDLING
18675  101122  000000                           .WORD 0                 ;IP16
18676  101124  000000                           .WORD 0                 ;IP17
18677  101126  000000                           .WORD 0                 ;IP20
18678  101130  000000                           .WORD 0                 ;IP21
18679  101132  000000                           .WORD 0                 ;IP22
18680  101134  000000                           .WORD 0                 ;IP23
18681  101136  000000                           .WORD 0                 ;IP24
18682
18683                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
18684                                   ;
18685                                   ;       SOURCE 1 LENGTH - 1,37
18686                                   ;       SOURCE 2 LENGTH - 1,37
18687                                   ;       SOURCE 1 ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER)
18688                                   ;       SOURCE 2 ADDRESS - NO OVERLAP OF STRINGS
18689                                   ;       SOURCE 1 DATA - ALL DIGITS IDENTICAL = 3; SIGN +
18690                                   ;                     - ALL DIGITS IDENTICAL = 3; SIGN -
18691                                   ;                     - ALL DIGITS IDENTICAL = 0; SIGN +
18692                                   ;                     - ALL DIGITS IDENTICAL = 0; SIGN -
18693                                   ;       SOURCE 2 DATA - ALL DIGITS IDENTICAL = 3; SIGN +
18694                                   ;                     - ALL DIGITS IDENTICAL = 3; SIGN -
18695                                   ;                     - ALL DIGITS IDENTICAL = 0; SIGN +
18696                                   ;                     - ALL DIGITS IDENTICAL = 0; SIGN -
18697                                   ;
18698                                   ;TOTAL # OF TEST CONDITIONS = 128
18699                                   ;TOTAL # OF TESTS = (2 DATA TYPES + 1 INLINE)128 = 384
18700                                   ;
```

```
18702                                   ;ENTRY 69 - INSTRUCTION UNDER TEST = CMPP
18703                                   ;
18704  101140  000024                   IEMPP4: .WORD 24                ;INST = CMPP
18705  101142  000003                           .WORD 3                 ;TYPE = 1(BIT 0);11/44 QV TABLE(BIT 1=1)
18706  101144  103436                           .WORD T1A               ;IP1 - SRC1.LEN
18707  101146  103776                           .WORD T2A               ;IP2 - SRC1.ADR
18708  101150  103436                           .WORD T1A               ;IP3 - SRC2.LEN
18709  101152  107552                           .WORD T44A              ;IP4 - SRC2.ADR
18710  101154  104660                           .WORD T5                ;IP5 - UNUSED PORTION OF REG. 4
18711  101156  106754                           .WORD TP19              ;IP6 - SRC1.DATA
18712  101160  103412                           .WORD T0                ;IP7 - SRC1.SURR.DATA
18713  101162  103412                           .WORD T0                ;IP10 - SRC1.SURR.LEN
18714  101164  106754                           .WORD TP19              ;IP11 - SRC2.DATA
18715  101166  103412                           .WORD T0                ;IP12 - SRC2.SURR.DATA
18716  101170  103412                           .WORD T0                ;IP13 - SRC2.SURR.LEN
18717  101172  105044                           .WORD T14               ;IP14 - SEPARATION CONSTANT
18718  101174  103662                           .WORD TSPA              ;IP15 - SPECIAL HANDLING
18719  101176  000000                           .WORD 0                 ;IP16
18720  101200  000000                           .WORD 0                 ;IP17
18721  101202  000000                           .WORD 0                 ;IP20
18722  101204  000000                           .WORD 0                 ;IP21
18723  101206  000000                           .WORD 0                 ;IP22
18724  101210  000000                           .WORD 0                 ;IP23
18725  101212  000000                           .WORD 0                 ;IP24
18726
18727                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
18728                                   ;
18729                                   ;       SOURCE 1 LENGTH - 0,1,2,3,4,5,11,20
18730                                   ;       SOURCE 2 LENGTH - 0,1,2,3,4,5,11,20
18731                                   ;       SOURCE 1 ADDRESS - 201 (RELATIVE TO START OF TEST BUFFER)
18732                                   ;       SOURCE 2 ADDRESS - NO OVERLAP OF ANY OF THE STRINGS
18733                                   ;       SOURCE 1 DATA - DIGITS FROM STRING = 123456789123456789123400089123З; SIGN +
18734                                   ;       SOURCE 2 DATA - DIGITS FROM STRING = 123456789123456789123400089123З; SIGN +
18735                                   ;
18736                                   ;TOTAL # OF TEST CONDITIONS = 64
18737                                   ;TOTAL # OF TESTS = (1 DATA TYPE IN REG MODE)64 = 64
18738                                   ;
```

```
18740                                   .SBTTL          CMPN TABLES
18741                                   ;ENTRY 70 - INSTRUCTION UNDER TEST = CMPN
18742                                   ;
18743  101214  000014                   ICMPN:  .WORD 14                ;INST = CMPN
18744  101216  000001                           .WORD 1                 ;TYPE = 1
18745  101220  103412                           .WORD T0                ;IP1 - SRC1.LEN
18746  101222  103766                           .WORD T2                ;IP2 - SRC1.ADR
18747  101224  103412                           .WORD T0                ;IP3 - SRC2.LEN
18748  101226  110006                           .WORD T46               ;IP4 - SRC2.ADR
18749  101230  104660                           .WORD T5                ;IP5 - UNUSED PORTION OF REG. 4
18750  101232  107504                           .WORD T42               ;IP6 - SRC1.DATA
18751  101234  106024                           .WORD T20               ;IP7 - SRC1.SURR.DATA
18752  101236  103412                           .WORD T0                ;IP10 - SRC1.SURR.LEN
18753  101240  107504                           .WORD T42               ;IP11 - SRC2.DATA
18754  101242  104742                           .WORD T7                ;IP12 - SRC2.SURR.DATA
18755  101244  104760                           .WORD T10               ;IP13 - SRC2.SURR.LEN
18756  101246  105044                           .WORD T14               ;IP14 - SEPARATION CONSTANT
18757  101250  103412                           .WORD T0                ;IP15 - SPECIAL HANDLING
18758  101252  000000                           .WORD 0                 ;IP16
18759  101254  000000                           .WORD 0                 ;IP17
18760  101256  000000                           .WORD 0                 ;IP20
18761  101260  000000                           .WORD 0                 ;IP21
18762  101262  000000                           .WORD 0                 ;IP22
18763  101264  000000                           .WORD 0                 ;IP23
18764  101266  000000                           .WORD 0                 ;IP24
18765
18766                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
18767                                   ;
18768                                   ;       SOURCE 1 LENGTH - 0
18769                                   ;       SOURCE 2 LENGTH - 0
18770                                   ;       SOURCE 1 ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER)
18771                                   ;       SOURCE 2 ADDRESS - NO OVERLAP OF STRINGS
18772                                   ;                       - STRINGS ADJACENT
18773                                   ;                       - STRINGS PARTIALLY OVERLAP
18774                                   ;                       - STRINGS COMPLETELY OVERLAP
18775                                   ;       SOURCE 1 DATA - ALL DIGITS IDENTICAL = 9; SIGN +; HIGH NIBBLE = 17
18776                                   ;       SOURCE 2 DATA - ALL DIGITS IDENTICAL = 9; SIGN +; HIGH NIBBLE =17
18777                                   ;
18778                                   ;TOTAL # OF TEST CONDITIONS =
18779                                   ;TOTAL # OF TESTS = (6 DATA TYPES + 1 INLINE)  =
18780                                   ;
```

```
18782
18783                                   ;ENTRY 71 - INSTRUCTION UNDER TEST = CMPN
18784                                   ;
18785  101270  000014                   ;CMPN1: .WORD 14                ;INST = CMPN
18786  101272  000001                           .WORD 1                 ;TYPE = 1
18787  101274  103412                           .WORD T0                ;IP1 - SRC1.LEN
18788  101276  103766                           .WORD T2                ;IP2 - SRC1.ADR
18789  101300  106042                           .WORD T21               ;IP3 - SRC2.LEN
18790  101302  110006                           .WORD T46               ;IP4 - SRC2.ADR
18791  101304  104660                           .WORD T5                ;IP5 - UNUSED PORTION OF REG. 4
18792  101306  107504                           .WORD T42               ;IP6 - SRC1.DATA
18793  101310  106024                           .WORD T20               ;IP7 - SRC1.SURR.DATA
18794  101312  103412                           .WORD T0                ;IP10 - SRC1.SURR.LEN
18795  101314  110230                           .WORD T47               ;IP11 - SRC2.DATA
18796  101316  104742                           .WORD T7                ;IP12 - SRC2.SURR.DATA
18797  101320  104760                           .WORD T10               ;IP13 - SRC2.SURR.LEN
18798  101322  105044                           .WORD T14               ;IP14 - SEPARATION CONSTANT
18799  101324  103412                           .WORD T0                ;IP15 - SPECIAL HANDLING
18800  101326  000000                           .WORD 0                 ;IP16
18801  101330  000000                           .WORD 0                 ;IP17
18802  101332  000000                           .WORD 0                 ;IP20
18803  101334  000000                           .WORD 0                 ;IP21
18804  101336  000000                           .WORD 0                 ;IP22
18805  101340  000000                           .WORD 0                 ;IP23
18806  101342  000000                           .WORD 0                 ;IP24
18807
18808                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
18809                                   ;
18810                                   ;       SOURCE 1 LENGTH - 0
18811                                   ;       SOURCE 2 LENGTH - 1,5
18812                                   ;       SOURCE 1 ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER)
18813                                   ;       SOURCE 2 ADDRESS - NO OVERLAP OF STRINGS
18814                                   ;                       - STRINGS ADJACENT
18815                                   ;                       - STRINGS PARTIALLY OVERLAP
18816                                   ;                       - STRINGS COMPLETELY OVERLAP
18817                                   ;       SOURCE 1 DATA - ALL DIGITS IDENTICAL = 9; SIGN +; HIGH NIBBLE = 17
18818                                   ;       SOURCE 2 DATA - ALL DIGITS IDENTICAL = 8; SIGN -; HIGH NIBBLE = 1
18819                                   ;                     - ALL DIGITS IDENTICAL = 8; SIGN +; HIGH NIBBLE = 17
18820                                   ;                     - ALL DIGITS IDENTICAL = 0; SIGN +; HIGH NIBBLE = 1
18821                                   ;                     - ALL DIGITS IDENTICAL = 0; SIGN -; HIGH NIBBLE = 8
18822                                   ;
18823                                   ;TOTAL # OF TEST CONDITIONS =
18824                                   ;TOTAL # OF TESTS = (6 DATA TYPES + 1 INLINE) =
18825                                   ;
```

```
18827
18828                                   ;ENTRY 72 - INSTRUCTION UNDER TEST = CMPN
18829                                   ;
18830  101344  000014                    ICMPN2: .WORD 14                ;INST = CMPN
18831  101346  000001                            .WORD 1                 ;TYPE = 1
18832  101350  106042                            .WORD T21               ;IP1 - SRC1.LEN
18833  101352  103766                            .WORD T2                ;IP2 - SRC1.ADR
18834  101354  103412                            .WORD T0                ;IP3 - SRC2.LEN
18835  101356  110006                            .WORD T46               ;IP4 - SRC2.ADR
18836  101360  104660                            .WORD T5                ;IP5 - UNUSED PORTION OF REG. 4
18837  101362  110230                            .WORD T47               ;IP6 - SRC1.DATA
18838  101364  106024                            .WORD T20               ;IP7 - SRC1.SURR.DATA
18839  101366  103412                            .WORD T0                ;IP10 - SRC1.SURR.LEN
18840  101370  107504                            .WORD T42               ;IP11 - SRC2.DATA
18841  101372  104742                            .WORD T7                ;IP12 - SRC2.SURR.DATA
18842  101374  104760                            .WORD T10               ;IP13 - SRC2.SURR.LEN
18843  101376  105044                            .WORD T14               ;IP14 - SEPARATION CONSTANT
18844  101400  103412                            .WORD T0                ;IP15 - SPECIAL HANDLING
18845  101402  000000                            .WORD 0                 ;IP16
18846  101404  000000                            .WORD 0                 ;IP17
18847  101406  000000                            .WORD 0                 ;IP20
18848  101410  000000                            .WORD 0                 ;IP21
18849  101412  000000                            .WORD 0                 ;IP22
18850  101414  000000                            .WORD 0                 ;IP23
18851  101416  000000                            .WORD 0                 ;IP24
18852
18853                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
18854                                   ;
18855                                   ;       SOURCE 1 LENGTH - 1,5
18856                                   ;       SOURCE 2 LENGTH - 0
18857                                   ;       SOURCE 1 ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER)
18858                                   ;       SOURCE 2 ADDRESS - NO OVERLAP OF STRINGS
18859                                   ;                       - STRINGS ADJACENT
18860                                   ;                       - STRINGS PARTIALLY OVERLAP
18861                                   ;                       - STRINGS COMPLETELY OVERLAP
18862                                   ;       SOURCE 1 DATA - ALL DIGITS IDENTICAL = 8; SIGN -; HIGH NIBBLE = 1
18863                                   ;                     - ALL DIGITS IDENTICAL = 8; SIGN +; HIGH NIBBLE = 17
18864                                   ;                     - ALL DIGITS IDENTICAL = 0; SIGN +; HIGH NIBBLE = 1
18865                                   ;                     - ALL DIGITS IDENTICAL = 0; SIGN -; HIGH NIBBLE = 8
18866                                   ;       SOURCE 2 DATA - ALL DIGITS IDENTICAL = 9; SIGN +; HIGH NIBBLE = 17
18867                                   ;
18868                                   ;TOTAL # OF TEST CONDITIONS =
18869                                   ;TOTAL # OF TESTS = (6 DATA TYPES + 1 INLINE) =
18870                                   ;
```

```
18872
18873                                   ;ENTRY 73 - INSTRUCTION UNDER TEST = CMPN
18874                                   ;
18875  101420  000014                    ICMPN3: .WORD 14                ;INST = CMPN
18876  101422  000001                            .WORD 1                 ;TYPE = 1
18877  101424  106056                            .WORD T211              ;IP1 - SRC1.LEN
18878  101426  103766                            .WORD T2                ;IP2 - SRC1.ADR
18879  101430  106074                            .WORD T212              ;IP3 - SRC2.LEN
18880  101432  110006                            .WORD T46               ;IP4 - SRC2.ADR
18881  101434  104660                            .WORD T5                ;IP5 - UNUSED PORTION OF REG. 4
18882  101436  110230                            .WORD T47               ;IP6 - SRC1.DATA
18883  101440  106024                            .WORD T20               ;IP7 - SRC1.SURR.DATA
18884  101442  103412                            .WORD T0                ;IP10 - SRC1.SURR.LEN
18885  101444  110230                            .WORD T47               ;IP11 - SRC2.DATA
18886  101446  104742                            .WORD T7                ;IP12 - SRC2.SURR.DATA
18887  101450  104760                            .WORD T10               ;IP13 - SRC2.SURR.LEN
18888  101452  105044                            .WORD T14               ;IP14 - SEPARATION CONSTANT
18889  101454  103412                            .WORD T0                ;IP15 - SPECIAL HANDLING
18890  101456  000000                            .WORD 0                 ;IP16
18891  101460  000000                            .WORD 0                 ;IP17
18892  101462  000000                            .WORD 0                 ;IP20
18893  101464  000000                            .WORD 0                 ;IP21
18894  101466  000000                            .WORD 0                 ;IP22
18895  101470  000000                            .WORD 0                 ;IP23
18896  101472  000000                            .WORD 0                 ;IP24
18897
18898                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
18899                                   ;
18900                                   ;       SOURCE 1 LENGTH - 1,37
18901                                   ;       SOURCE 2 LENGTH - 1,37
18902                                   ;       SOURCE 1 ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER)
18903                                   ;       SOURCE 2 ADDRESS - NO OVERLAP OF STRINGS
18904                                   ;                       - STRINGS ADJACENT
18905                                   ;                       - STRINGS PARTIALLY OVERLAP
18906                                   ;                       - STRINGS COMPLETELY OVERLAP
18907                                   ;       SOURCE 1 DATA - ALL DIGITS IDENTICAL = 8; SIGN -; HIGH NIBBLE = 1
18908                                   ;                     - ALL DIGITS IDENTICAL = 8; SIGN +; HIGH NIBBLE = 17
18909                                   ;                     - ALL DIGITS IDENTICAL = 0; SIGN +; HIGH NIBBLE = 1
18910                                   ;                     - ALL DIGITS IDENTICAL = 0; SIGN -; HIGH NIBBLE = 8
18911                                   ;       SOURCE 2 DATA - ALL DIGITS IDENTICAL = 8; SIGN -; HIGH NIBBLE = 1
18912                                   ;                     - ALL DIGITS IDENTICAL = 8; SIGN +; HIGH NIBBLE = 17
18913                                   ;                     - ALL DIGITS IDENTICAL = 0; SIGN +; HIGH NIBBLE = 1
18914                                   ;                     - ALL DIGITS IDENTICAL = 0; SIGN -; HIGH NIBBLE = 8
18915                                   ;
18916                                   ;TOTAL # OF TEST CONDITIONS = 256
18917                                   ;TOTAL # OF TESTS = (6 DATA TYPES + 1 INLINE) = 832
18918                                   ;
```

```
18920                                   ;ENTRY 74 - INSTRUCTION UNDER TEST = CMPN
18921                                   ;
18922  101474  000014                   ICMPN4: .WORD 14                ;INST = CMPN
18923  101476  000003                           .WORD 3                 ;TYPE = 1(BIT 0);11/44 QV TABLE(BIT 1=1)
18924  101500  103436                           .WORD T1A               ;IP1 - SRC1.LEN
18925  101502  103776                           .WORD T2A               ;IP2 - SRC1.ADR
18926  101504  103436                           .WORD T1A               ;IP3 - SRC2.LEN
18927  101506  107760                           .WORD T46A              ;IP4 - SRC2.ADR
18928  101510  104660                           .WORD T5                ;IP5 - UNUSED PORTION OF REG. 4
18929  101512  107314                           .WORD TZ19              ;IP6 - SRC1.DATA
18930  101514  103412                           .WORD T0                ;IP7 - SRC1.SURR.DATA
18931  101516  103412                           .WORD T0                ;IP10 - SRC1.SURR.LEN
18932  101520  107314                           .WORD TZ19              ;IP11 - SRC2.DATA
18933  101522  103412                           .WORD T0                ;IP12 - SRC2.SURR.DATA
18934  101524  103412                           .WORD T0                ;IP13 - SRC2.SURR.LEN
18935  101526  105044                           .WORD T14               ;IP14 - SEPARATION CONSTANT
18936  101530  103662                           .WORD TSPA              ;IP15 - SPECIAL HANDLING
18937  101532  000000                           .WORD 0                 ;IP16
18938  101534  000000                           .WORD 0                 ;IP17
18939  101536  000000                           .WORD 0                 ;IP20
18940  101540  000000                           .WORD 0                 ;IP21
18941  101542  000000                           .WORD 0                 ;IP22
18942  101544  000000                           .WORD 0                 ;IP23
18943  101546  000000                           .WORD 0                 ;IP24
18944
18945                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
18946                                   ;
18947                                   ;       SOURCE 1 LENGTH - 0,1,2,3,4,5,11,20
18948                                   ;       SOURCE 2 LENGTH - 0,1,2,3,4,5,11,20
18949                                   ;       SOURCE 1 ADDRESS - 201 (RELATIVE TO START OF TEST BUFFER)
18950                                   ;       SOURCE 2 ADDRESS - NO OVERLAP OF STRINGS
18951                                   ;       SOURCE 1 DATA - DIGITS FROM STRING = 12345678912345678912340008912333; SIGN +
18952                                   ;       SOURCE 2 DATA - DIGITS FROM STRING = 12345678912345678912340008912333; SIGN +
18953                                   ;
18954                                   ;TOTAL # OF TEST CONDITIONS = 64
18955                                   ;TOTAL # OF TESTS = (1 DATA TYPE IN REG MODE)64 = 64
18956                                   ;
```

```
18958                                   .SBTTL          ASHP TABLES
18959                                   ;ENTRY 75 - INSTRUCTION UNDER TEST = ASHP
18960                                   ;
18961  101550  000030                   ;ASHP:  .WORD 30                ;INST=ASHP
18962  101552  000001                           .WORD 1                 ;TYPE = 1
18963  101554  103666                           .WORD T111              ;IP1 - SRC.LEN
18964  101556  103766                           .WORD T2                ;IP2 - SRC.ADR
18965  101560  110264                           .WORD T50               ;IP3 - RND.DGT,SHFT.CNT
18966  101562  103706                           .WORD T112              ;IP4 - DST.LEN
18967  101564  106610                           .WORD T34               ;IP5 - DST.ADR
18968  101566  107046                           .WORD T35B              ;IP6 - SRC DATA
18969  101570  106024                           .WORD T20               ;IP7 - SRC SURR DATA
18970  101572  103412                           .WORD T0                ;IP10 - SRC SURR LEN
18971  101574  104774                           .WORD T11               ;IP11 - DST DATA
18972  101576  105012                           .WORD T12               ;IP12 - DST SURR DATA
18973  101600  105030                           .WORD T13               ;IP13 - DST SURR LEN
18974  101602  107522                           .WORD T43               ;IP14 - SEP CONST
18975  101604  103412                           .WORD T0                ;IP15 - SPECIAL HANDLING
18976  101606  000000                           .WORD 0                 ;IP16
18977  101610  000000                           .WORD 0                 ;IP17
18978  101612  000000                           .WORD 0                 ;IP20
18979  101614  000000                           .WORD 0                 ;IP21
18980  101616  000000                           .WORD 0                 ;IP22
18981  101620  000000                           .WORD 0                 ;IP23
18982  101622  000000                           .WORD 0                 ;IP24
18983
18984                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
18985                                   ;
18986                                   ;       SOURCE LENGTH - 0,1,37
18987                                   ;       DESTINATION LENGTH - 0,1,37
18988                                   ;       SOURCE ADDRESS - 200
18989                                   ;       DESTINATION ADDRESS - NO OVERLAP OF SOURCE & DESTINATION STRINGS
18990                                   ;                           - STRINGS ADJACENT
18991                                   ;       SOURCE DATA - ALL DIGITS IDENTICAL = 8; SIGN -
18992                                   ;                   - ALL DIGITS IDENTICAL = 0; SIGN -
18993                                   ;                   - DIGITS FROM STRING = 12345678912345678912340008912 33; SIGN +
18994                                   ;                   - DIGITS FROM STRING = 000888-
18995                                   ;                   - DIGITS FROM STRING = 40000000000000000000000000000000-
18996                                   ;       ROUND DIGIT, SHIFT COUNT -      0,0
18997                                   ;                                -      5,-2
18998                                   ;                                -      9,2
18999                                   ;                                -      3,-3
19000                                   ;                                -      1,-3
19001                                   ;                                -      0,5
19002                                   ;
19003                                   ;TOTAL # OF TEST CONDITIONS = 540
19004                                   ;TOTAL # OF TESTS = (2 DATA TYPES * 1 INLINE)540 = 1620
19005                                   ;
```

```
19007                                   ;ENTRY 76 - INSTRUCTION UNDER TEST = ASHP
19008                                   ;
19009  101624  000030                   IASHP1: .WORD 30                ;INST=ASHP
19010  101626  000001                           .WORD 1                 ;TYPE = 1
19011  101630  103436                           .WORD T1A               ;IP1 - SRC.LEN
19012  101632  103776                           .WORD T2A               ;IP2 - SRC.ADR
19013  101634  110330                           .WORD T50C              ;IP3 - RND.DGT,SHFT.CNT
19014  101636  103436                           .WORD T1A               ;IP4 - DST.LEN
19015  101640  106556                           .WORD T34A              ;IP5 - DST.ADR
19016  101642  106754                           .WORD TP19              ;IP6 - SRC DATA
19017  101644  103412                           .WORD T0                ;IP7 - SRC SURR DATA
19018  101646  103412                           .WORD T0                ;IP10 - SRC SURR LEN
19019  101650  103412                           .WORD T0                ;IP11 - DST DATA
19020  101652  103412                           .WORD T0                ;IP12 - DST SURR DATA
19021  101654  103412                           .WORD T0                ;IP13 - DST SURR LEN
19022  101656  105044                           .WORD T14               ;IP14 - SEP CONST
19023  101660  103662                           .WORD TSPA              ;IP15 - SPECIAL HANDLING
19024  101662  000000                           .WORD 0                 ;IP16
19025  101664  000000                           .WORD 0                 ;IP17
19026  101666  000000                           .WORD 0                 ;IP20
19027  101670  000000                           .WORD 0                 ;IP21
19028  101672  000000                           .WORD 0                 ;IP22
19029  101674  000000                           .WORD 0                 ;IP23
19030  101676  000000                           .WORD 0                 ;IP24
19031
19032                                   ;THIS TABLE EXERCISE ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
19033                                   ;
19034                                   ;       SOURCE LENGTH - 0,1,2,3,4,5,11,20
19035                                   ;       DESTINATION LENGTH - 0,1,2,3,4,5,11,20
19036                                   ;       SOURCE ADDRESS - 201 (RELATIVE TO START OF TEST BUFFER)
19037                                   ;       DESTINATION ADDRESS - NO OVERLAP
19038                                   ;       SOURCE DATA - DIGITS FROM STRING = 12345678912345678912340008912 33; SIGN +
19039                                   ;       ROUND DIGIT, SHIFT COUNT -   7,-1
19040                                   ;                                    7,-2
19041                                   ;                                    1, 0
19042                                   ;                                    8, 3
19043                                   ;
19044                                   ;TOTAL # OF TESTS = 256
```

```
19046                                   ;ENTRY 76A - INSTRUCTION UNDER TEST = ASHP
19047                                   ;
19048  101700  000030                   ;ASHP2: .WORD 30                ;INST=ASHP
19049  101702  000003                           .WORD 3                 ;TYPE = 1(BIT 0);11/44 QV TABLE(BIT 1=!)
19050  101704  103524                           .WORD T1F               ;IP1 - SRC.LEN
19051  101706  103776                           .WORD T2A               ;IP2 - SRC.ADR
19052  101710  110344                           .WORD T50D              ;IP3 - RND.DGT,SHFT.CNT
19053  101712  103562                           .WORD T1K               ;IP4 - DST.LEN
19054  101714  106556                           .WORD T34A              ;IP5 - DST.ADR
19055  101716  107040                           .WORD TP99              ;IP6 - SRC DATA
19056  101720  103412                           .WORD T0                ;IP7 - SRC SURR DATA
19057  101722  103412                           .WORD T0                ;IP10 - SRC SURR LEN
19058  101724  103412                           .WORD T0                ;IP11 - DST DATA
19059  101726  103412                           .WORD T0                ;IP12 - DST SURR DATA
19060  101730  103412                           .WORD T0                ;IP13 - DST SURR LEN
19061  101732  105044                           .WORD T14               ;IP14 - SEP CONST
19062  101734  103412                           .WORD T0                ;IP15 - SPECIAL HANDLING
19063  101736  000000                           .WORD 0                 ;IP16
19064  101740  000000                           .WORD 0                 ;IP17
19065  101742  000000                           .WORD 0                 ;IP20
19066  101744  000000                           .WORD 0                 ;IP21
19067  101746  000000                           .WORD 0                 ;IP22
19068  101750  000000                           .WORD 0                 ;IP23
19069  101752  000000                           .WORD 0                 ;IP24
19070
19071                                   ;THIS TABLE EXERCISE ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
19072                                   ;
19073                                   ;       SOURCE LENGTH - 20,16,17,3
19074                                   ;       DESTINATION LENGTH - 20,16,17,1
19075                                   ;       SOURCE ADDRESS - 201 (RELATIVE TO START OF TEST BUFFER)
19076                                   ;       DESTINATION ADDRESS - NO OVERLAP
19077                                   ;       SOURCE DATA - ALL DIGITS IDENTICAL = 9; SIGN -
19078                                   ;       ROUND DIGIT, SHIFT COUNT -   2,-2
19079                                   ;                                    9,-3
19080                                   ;
19081                                   ;TOTAL # OF TEST CONDITIONS = 32
19082                                   ;TOTAL # OF TESTS = (2 DATA TYPES + 1 IN-LINE) 32 = 96
```

```
19084                                   .SBTTL          ASHN TABLES
19085                                   ;ENTRY 77 - INSTRUCTION UNDER TEST = ASHN
19086                                   ;
19087  101754  000020                   IASHN:  .WORD 20                ;INST=ASHN
19088  101756  000001                           .WORD 1                 ;TYPE = 1
19089  101760  103666                           .WORD T111              ;IP1 - SRC.LEN
19090  101762  103766                           .WORD T2                ;IP2 - SRC.ADR
19091  101764  110264                           .WORD T50               ;IP3 - RND.DGT,SHFT.CNT
19092  101766  103706                           .WORD T112              ;IP4 - DST.LEN
19093  101770  107144                           .WORD T36               ;IP5 - DST.ADR
19094  101772  107324                           .WORD T37B              ;IP6 - SRC DATA
19095  101774  106024                           .WORD T20               ;IP7 - SRC SURR DATA
19096  101776  103412                           .WORD T0                ;IP10 - SRC SURR LEN
19097  102000  104774                           .WORD T11               ;IP11 - DST DATA
19098  102002  105012                           .WORD T12               ;IP12 - DST SURR DATA
19099  102004  105030                           .WORD T13               ;IP13 - DST SURR LEN
19100  102006  107522                           .WORD T43               ;IP14 - SEP CONST
19101  102010  103412                           .WORD T0                ;IP15 - SPECIAL HANDLING
19102  102012  000000                           .WORD 0                 ;IP16
19103  102014  000000                           .WORD 0                 ;IP17
19104  102016  000000                           .WORD 0                 ;IP20
19105  102020  000000                           .WORD 0                 ;IP21
19106  102022  000000                           .WORD 0                 ;IP22
19107  102024  000000                           .WORD 0                 ;IP23
19108  102026  000000                           .WORD 0                 ;IP24
19109
19110                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
19111                                   ;
19112                                   ;       SOURCE LENGTH - 0,1,37
19113                                   ;       DESTINATION LENGTH - 0,1,37
19114                                   ;       SOURCE ADDRESS - 200
19115                                   ;       DESTINATION ADDRESS - NO OVERLAP OF SOURCE & DESTINATION STRINGS
19116                                   ;                           - STRINGS ADJACENT
19117                                   ;       SOURCE DATA - ALL DIGITS IDENTICAL = 8; SIGN -; HIGH NIBBLE = 8
19118                                   ;                   - ALL DIGITS IDENTICAL = 0; SIGN -; HIGH NIBBLE = 1
19119                                   ;                   - DIGITS FROM STRING = 12345678912345678912340008912 33; SIGN +
19120                                   ;                   - DIGITS FROM STRING = 000888-
19121                                   ;                   - DIGITS FROM STRING = 40000000000000000000000000000000-
19122                                   ;       ROUND DIGIT, SHIFT COUNT -      0,0
19123                                   ;                                -      5,-2
19124                                   ;                                -      9,2
19125                                   ;                                -      3,-3
19126                                   ;                                -      1,-3
19127                                   ;                                -      0,5
19128                                   ;
19129                                   ;TOTAL # OF TEST CONDITIONS = 540
19130                                   ;TOTAL # OF TESTS = (6 DATA TYPES + 1 INLINE)540 = 3780
19131                                   ;
```

```
19133                                   ;ENTRY 78 - INSTRUCTION UNDER TEST = ASHN
19134                                   ;
19135  102030  000020                    ;ASHN1: .WORD 20                ;INST=ASHN
19136  102032  000003                            .WORD 3                 ;TYPE = 1(BIT 0);11/44 QV TABLE(BIT 1=1)
19137  102034  103436                            .WORD T1A               ;IP1 - SRC.LEN
19138  102036  103776                            .WORD T2A               ;IP2 - SRC.ADR
19139  102040  110314                            .WORD T50A              ;IP3 - RND.DGT,SHFT.CNT
19140  102042  103436                            .WORD T1A               ;IP4 - DST.LEN
19141  102044  107116                            .WORD T36A              ;IP5 - DST.ADR
19142  102046  107314                            .WORD TZ19              ;IP6 - SRC DATA
19143  102050  103412                            .WORD T0                ;IP7 - SRC SURR DATA
19144  102052  103412                            .WORD T0                ;IP10 - SRC SURR LEN
19145  102054  103412                            .WORD T0                ;IP11 - DST DATA
19146  102056  103412                            .WORD T0                ;IP12 - DST SURR DATA
19147  102060  103412                            .WORD T0                ;IP13 - DST SURR LEN
19148  102062  105044                            .WORD T14               ;IP14 - SEP CONST
19149  102064  103662                            .WORD TSPA              ;IP15 - SPECIAL HANDLING
19150  102066  000000                            .WORD 0                 ;IP16
19151  102070  000000                            .WORD 0                 ;IP17
19152  102072  000000                            .WORD 0                 ;IP20
19153  102074  000000                            .WORD 0                 ;IP21
19154  102076  000000                            .WORD 0                 ;IP22
19155  102100  000000                            .WORD 0                 ;IP23
19156  102102  000000                            .WORD 0                 ;IP24
19157
19158                                   ;THIS TABLE EXERCISE ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
19159                                   ;
19160                                   ;       SOURCE LENGTH - 0,1,2,3,4,5,11,20
19161                                   ;       DESTINATION LENGTH - 0,1,2,3,4,5,11,20
19162                                   ;       SOURCE ADDRESS - 201 (RELATIVE TO START OF TEST BUFFER)
19163                                   ;       DESTINATION ADDRESS - NO OVERLAP
19164                                   ;       SOURCE DATA - DIGITS FROM STRING = 1234567891234567891234000891233; SIGN +
19165                                   ;       ROUND DIGIT, SHIFT COUNT -   5,-1
19166                                   ;
19167                                   ;TOTAL # OF TESTS = 64
```

```
19169                                   ;ENTRY 78A -. INSTRUCTION UNDER TEST = ASHN
19170                                   ;
19171  102104  000020                   IASHN2: .WORD 20                ;INST=ASHN
19172  102106  000003                           .WORD 3                 ;TYPE = 1(BIT 0);11/44 QV TABLE(BIT 1=1)
19173  102110  103506                           .WORD T1D               ;IP1 - SRC.LEN
19174  102112  103776                           .WORD T2A               ;IP2 - SRC.ADR
19175  102114  110320                           .WORD T50B              ;IP3 - RND.DGT,SHFT.CNT
19176  102116  103516                           .WORD T1E               ;IP4 - DST.LEN
19177  102120  107116                           .WORD T36A              ;IP5 - DST.ADR
19178  102122  107314                           .WORD TZ19              ;IP6 - SRC DATA
19179  102124  103412                           .WORD T0                ;IP7 - SRC SURR DATA
19180  102126  103412                           .WORD T0                ;IP10 - SRC SURR LEN
19181  102130  103412                           .WORD T0                ;IP11 - DST DATA
19182  102132  103412                           .WORD T0                ;IP12 - DST SURR DATA
19183  102134  103412                           .WORD T0                ;IP13 - DST SURR LEN
19184  102136  105044                           .WORD T14               ;IP14 - SEP CONST
19185  102140  103412                           .WORD T0                ;IP15 - SPECIAL HANDLING
19186  102142  000000                           .WORD 0                 ;IP16
19187  102144  000000                           .WORD 0                 ;IP17
19188  102146  000000                           .WORD 0                 ;IP20
19189  102150  000000                           .WORD 0                 ;IP21
19190  102152  000000                           .WORD 0                 ;IP22
19191  102154  000000                           .WORD 0                 ;IP23
19192  102156  000000                           .WORD 0                 ;IP24
19193
19194                                   ;THIS TABLE EXERCISE ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
19195                                   ;
19196                                   ;       SOURCE LENGTH - 1,2
19197                                   ;       DESTINATION LENGTH - 2,3
19198                                   ;       SOURCE ADDRESS - 201 (RELATIVE TO START OF TEST BUFFER)
19199                                   ;       DESTINATION ADDRESS - NO OVERLAP
19200                                   ;       SOURCE DATA - DIGITS FROM STRING = 12345678912345678912340008912333; SIGN +
19201                                   ;       ROUND DIGIT, SHIFT COUNT -   7,-1
19202                                   ;                                    7, 2
19203                                   ;
19204                                   ;TOTAL # OF TEST CONDITIONS = 8
19205                                   ;TOTAL # OF TESTS (6 DATA TYPES + 1 IN-LINE)8 = 56
```

```
                                        .SBTTL          MULP TABLES
                                        ;ENTRY 79 - INSTRUCTION UNDER TEST = MULP
                                        ;
102160  000026                  IMULP:  .WORD   26              ;INST=MULP
102162  000003                          .WORD 3                 ;TYPE = 1(BIT 0);11/44 QV TABLE(BIT 1=1)
102164  103412                          .WORD   T0              ;IP1 - SRC1.LEN
102166  103766                          .WORD   T2              ;IP2 - SRC1.ADR
102170  103412                          .WORD   T0              ;IP3 - SRC2.LEN
102172  105416                          .WORD   T16+1           ;IP4 - SRC2.ADR
102174  103416                          .WORD   XT1             ;IP5 - DST.LEN
102176  103412                          .WORD   T0              ;IP6 - DST.ADR - SPECIFIED BY T16 USED FOR IP4
102200  106152                          .WORD   T22             ;IP7 - SRC1 DATA
102202  104742                          .WORD   T7              ;IP10 - SRC1 SURR DATA
102204  104760                          .WORD   T10             ;IP11 - SRC1 SURR LEN
102206  106152                          .WORD   T22             ;IP12 - SRC2 DATA
102210  106024                          .WORD   T20             ;IP13 - SRC2 SURR DATA
102212  103412                          .WORD   T0              ;IP14 - SRC2 SURR LEN  (LENGTH SET TO 0 SO
                                                                ;  AS NOT TO DESTROY ANY OF SRC1)
102214  104774                          .WORD   T11             ;IP15 - DST DATA
102216  105012                          .WORD   T12             ;IP16 - DST SURR DATA
102220  105030                          .WORD   T13             ;IP17 - DST SURR LEN
102222  105044                          .WORD   T14             ;IP20 - SEPARATION CONSTRANT
102224  103412                          .WORD   T0              ;IP21 -SPECIAL HANDLING
102226  000000                          .WORD   0               ;IP22
102230  000000                          .WORD   0               ;IP23
102232  000000                          .WORD   0               ;IP24

                                        ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
                                        ;
                                        ;       SOURCE 1 LENGTH - 0
                                        ;       SOURCE 2 LENGTH - 0
                                        ;       DESTINATION LENGTH - 0,1,5
                                        ;       SOURCE 1 ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER)
                                        ;       SOURCE 2 ADDRESS,DEST ADDRESS - NO OVERLAP OF ANY OF THE 3 STRINGS
                                        ;                                       - SOURCE 2 STRING ADJACENT WITH DESTINATION STRING
                                        ;       SOURCE 1 DATA - ALL DIGITS IDENTICAL = 3; SIGN +
                                        ;       SOURCE 2 DATA - ALL DIGITS IDENTICAL = 3; SIGN +
                                        ;
                                        ;TOTAL # OF TEST CONDITIONS = 6
                                        ;TOTAL # OF TESTS = (2 DATA TYPES + 1 INLINE)6 = 18
                                        ;
```

```
19249
19250
19251                                   ;
19252                                   ;ENTRY 80 - INSTRUCTION UNDER TEST = MULP
19253                                   ;
19254  102234  000026                   IMULP1: .WORD   26              ;INST=MULP
19255  102236  000001                           .WORD   1               ;TYPE = 1
19256  102240  103412                           .WORD   T0              ;IP1 - SRC1.LEN
19257  102242  103766                           .WORD   T2              ;IP2 - SRC1.ADR
19258  102244  106042                           .WORD   T21             ;IP3 - SRC2.LEN
19259  102246  105416                           .WORD   T161            ;IP4 - SRC2.ADR
19260  102250  103416                           .WORD   XT1             ;IP5 - DST.LEN
19261  102252  103412                           .WORD   T0              ;IP6 - DST.ADR - SPECIFIED BY T16 USED FOR IP4
19262  102254  106152                           .WORD   T22             ;IP7 - SRC1 DATA
19263  102256  104742                           .WORD   T7              ;IP10 - SRC1 SURR DATA
19264  102260  104760                           .WORD   T10             ;IP11 - SRC1 SURR LEN
19265  102262  105750                           .WORD   T17             ;IP12 - SRC2 DATA
19266  102264  106024                           .WORD   T20             ;IP13 - SRC2 SURR DATA
19267  102266  103412                           .WORD   T0              ;IP14 - SRC2 SURR LEN  (LENGTH SET TO 0 SO
19268                                                                   ;  AS NOT TO DESTROY ANY OF SRC1)
19269  102270  104774                           .WORD   T11             ;IP15 - DST DATA
19270  102272  105012                           .WORD   T12             ;IP16 - DST SURR DATA
19271  102274  105030                           .WORD   T13             ;IP17 - DST SURR LEN
19272  102276  105044                           .WORD   T14             ;IP20 - SEPARATION CONSTRANT
19273  102300  103412                           .WORD   T0              ;IP21 -SPECIAL HANDLING
19274  102302  000000                           .WORD   0               ;IP22
19275  102304  000000                           .WORD   0               ;IP23
19276  102306  000000                           .WORD   0               ;IP24
19277
19278                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
19279                                   ;
19280                                   ;       SOURCE 1 LENGTH - 0
19281                                   ;       SOURCE 2 LENGTH - 1,5
19282                                   ;       DESTINATION LENGTH - 0,1,5
19283                                   ;       SOURCE 1 ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER)
19284                                   ;       SOURCE 2 ADDRESS, DEST ADDRESS - NO OVERLAP OF ANY OF THE 3 STRINGS
19285                                   ;                                      - SOURCE 2 STRING ADJACENT WITH DESTINATION STRIN
19286                                   ;       SOURCE 1 DATA - ALL DIGITS IDENTICAL = 3; SIGN +
19287                                   ;       SOURCE 2 DATA - DIGTIS FROM STRING = 123456789123456789123400089123 3; SIGN +
19288                                   ;                     - ALL DIGITS IDENTICAL = 5; SIGN +
19289                                   ;                     - ALL DIGITS IDENTICAL =3; SIGN -
19290                                   ;                     - ALL DIGITS IDENTICAL = 0; SIGN +
19291                                   ;
19292                                   ;TOTAL # OF TEST CONDITIONS = 48
19293                                   ;TOTAL # OF TESTS = (2 DATA TYPES + 1 INLINE)48 = 144
                                        ;
```

```
                                ;ENTRY 81 - INSTRUCTION UNDER TEST = MULP
                                ;
102310  000026  IMULP2: .WORD   26              ;INST=MULP
102312  000001         .WORD   1               ;TYPE = 1
102314  106042         .WORD   T21             ;IP1 - SRC1.LEN
102316  103766         .WORD   T2              ;IP2 - SRC1.ADR
102320  103412         .WORD   T0              ;IP3 - SRC2.LEN
102322  105416         .WORD   T161            ;IP4 - SRC2.ADR
102324  103416         .WORD   XT1             ;IP5 - DST.LEN
102326  103412         .WORD   T0              ;IP6 - DST.ADR - SPECIFIED BY T16 USED FOR IP4
102330  105750         .WORD   T17             ;IP7 - SRC1 DATA
102332  104742         .WORD   T7              ;IP10 - SRC1 SURR DATA
102334  104760         .WORD   T10             ;IP11 - SRC1 SURR LEN
102336  106152         .WORD   T22             ;IP12 - SRC2 DATA
102340  106024         .WORD   T20             ;IP13 - SRC2 SURR DATA
102342  103412         .WORD   T0              ;IP14 - SRC2 SURR LEN  (LENGTH SET TO 0 SO
                                               ;  AS NOT TO DESTROY ANY OF SRC1)
102344  104774         .WORD   T11             ;IP15 - DST DATA
102346  105012         .WORD   T12             ;IP16 - DST SURR DATA
102350  105030         .WORD   T13             ;IP17 - DST SURR LEN
102352  105044         .WORD   T14             ;IP20 - SEPARATION CONSTRANT
102354  103412         .WORD   T0              ;IP21 - SPECIAL HANDLING
102356  000000         .WORD   0               ;IP22
102360  000000         .WORD   0               ;IP23
102362  000000         .WORD   0               ;IP24
                                ;
                                ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
                                ;
                                ;       SOURCE 1 LENGTH - 1,5
                                ;       SOURCE 2 LENGTH - 0
                                ;       DESTINATION LENGTH - 0,1,5
                                ;       SOURCE 1 ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER)
                                ;       SOURCE 2 ADDRESS, DEST ADDRESS - NO OVERLAP OF ANY OF THE 3 STRINGS
                                ;                                        - SOURCE 2 STRING ADJACENT WITH DESTINATION STRIN
                                ;       SOURCE 1 DATA - DIGITS FROM STRING = 12345678912345678912340008912333; SIGN +
                                ;                     - ALL DIGITS IDENTICAL = 5; SIGN +
                                ;                     - ALL DIGITS IDENTICAL = 3; SIGN -
                                ;                     - ALL DIGITS IDENTICAL = 0; SIGN +
                                ;       SOURCE 2 DATA - ALL DIGITS IDENTICAL = 3; SIGN +
                                ;
                                ;TOTAL # OF TEST CONDITIONS =48
                                ;TOTAL # OF TESTS = (2 DATA TYPES + 1 INLINE)48 = 144
                                ;
```

```
19339                                   ;ENTRY 82 - INSTRUCTION UNDER TEST = MULP
19340                                   ;
19341  102364  000026                   IMULP3: .WORD   26              ;INST=MULP
19342  102366  000001                           .WORD   1               ;TYPE = 1
19343  102370  106056                           .WORD   T211            ;IP1 - SRC1.LEN
19344  102372  103766                           .WORD   T2              ;IP2 - SRC1.ADR
19345  102374  106074                           .WORD   T212            ;IP3 - SRC2.LEN
19346  102376  105416                           .WORD   T161            ;IP4 - SRC2.ADR
19347  102400  103616                           .WORD   T12             ;IP5 - DST.LEN
19348  102402  103412                           .WORD   T0              ;IP6 - DST.ADR - SPECIFIED BY T16 USED FOR IP4
19349  102404  105750                           .WORD   T17             ;IP7 - SRC1 DATA
19350  102406  104742                           .WORD   T7              ;IP10 - SRC1 SURR DATA
19351  102410  104760                           .WORD   T10             ;IP11 - SRC1 SURR LEN
19352  102412  105750                           .WORD   T17             ;IP12 - SRC2 DATA
19353  102414  106024                           .WORD   T20             ;IP13 - SRC2 SURR DATA
19354  102416  103412                           .WORD   T0              ;IP14 - SRC2 SURR LEN  (LENGTH SET TO 0 SO
19355                                                                   ;  AS NOT TO DESTROY ANY OF SRC1)
19356  102420  104774                           .WORD   T11             ;IP15 - DST DATA
19357  102422  105012                           .WORD   T12             ;IP16 - DST SURR DATA
19358  102424  105030                           .WORD   T13             ;IP17 - DST SURR LEN
19359  102426  105044                           .WORD   T14             ;IP20 - SEPARATION CONSTRANT
19360  102430  103412                           .WORD   T0              ;IP21 - SPECIAL HANDLING
19361  102432  000000                           .WORD   0               ;IP22
19362  102434  000000                           .WORD   0               ;IP23
19363  102436  000000                           .WORD   0               ;IP24
19364
19365                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
19366                                   ;
19367                                   ;       SOURCE 1 LENGTH - 1,37
19368                                   ;       SOURCE 2 LENGTH - 1,37
19369                                   ;       DESTINATION LENGTH - 0,1,37
19370                                   ;       SOURCE 1 ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER)
19371                                   ;       SOURCE 2 ADDRESS, DEST ADDRESS - NO OVERLAP OF ANY OF THE 3 STRINGS
19372                                   ;                                        - SOURCE 2 STRING ADJACENT WITH DEST STRING
19373                                   ;       SOURCE 1 DATA - DIGITS FROM STRING = 12345678912345678912340008912333; SIGN +
19374                                   ;                     - ALL DIGITS IDENTICAL = 5; SIGN +
19375                                   ;                     - ALL DIGITS IDENTICAL = 3; SIGN -
19376                                   ;                     - ALL DIGITS IDENTICAL = 0; SIGN +
19377                                   ;       SOURCE 2 DATA - DIGITS FROM STRING = 12345678912345678912340008912333; SIGN +
19378                                   ;                     - ALL DIGITS IDENTICAL = 5; SIGN +
19379                                   ;                     - ALL DIGITS IDENTICAL = 3; SIGN -
19380                                   ;                     - ALL DIGITS IDENTICAL = 0; SIGN +
19381                                   ;
19382                                   ;TOTAL # OF TEST CONDITIONS = 384
19383                                   ;TOTAL # OF TESTS = (2 DATA TYPES + 1 INLINE)384 = 1152
19384                                   ;
```

```
19386                                   ;ENTRY 83 - INSTRUCTION UNDER TEST = MULP
19387                                   ;
19388  102440  000026                   IMULP4: .WORD   26              ;INST=MULP
19389  102442  000001                           .WORD   1               ;TYPE = 1
19390  102444  103436                           .WORD   T1A             ;IP1 - SRC1.LEN
19391  102446  103776                           .WORD   T2A             ;IP2 - SRC1.ADR
19392  102450  103436                           .WORD   T1A             ;IP3 - SRC2.LEN
19393  102452  105116                           .WORD   T16A            ;IP4 - SRC2.ADR
19394  102454  103436                           .WORD   T1A             ;IP5 - DST.LEN
19395  102456  103412                           .WORD   T0              ;IP6 - DST.ADR - SPECIFIED BY T16 USED FOR IP4
19396  102460  106754                           .WORD   TP19            ;IP7 - SRC1 DATA
19397  102462  103412                           .WORD   T0              ;IP10 - SRC1 SURR DATA
19398  102464  103412                           .WORD   T0              ;IP11 - SRC1 SURR LEN
19399  102466  106754                           .WORD   TP19            ;IP12 - SRC2 DATA
19400  102470  103412                           .WORD   T0              ;IP13 - SRC2 SURR DATA
19401  102472  103412                           .WORD   T0              ;IP14 - SRC2 SURR LEN  (LENGTH SET TO 0 SO
19402                                                                   ;  AS NOT TO DESTROY ANY OF SRC1)
19403  102474  103412                           .WORD   T0              ;IP15 - DST DATA
19404  102476  103412                           .WORD   T0              ;IP16 - DST SURR DATA
19405  102500  103412                           .WORD   T0              ;IP17 - DST SURR LEN
19406  102502  105044                           .WORD   T14             ;IP20 - SEPARATION CONSTRANT
19407  102504  103662                           .WORD   TSPA            ;IP21 - SPECIAL HANDLING
19408  102506  000000                           .WORD   0               ;IP22
19409  102510  000000                           .WORD   0               ;IP23
19410  102512  000000                           .WORD   0               ;IP24
19411
19412                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
19413                                   ;
19414                                   ;       SOURCE 1 LENGTH - 0,1,2,3,4,5,11,20
19415                                   ;       SOURCE 2 LENGTH - 0,1,2,3,4,5,11,20
19416                                   ;       DESTINATION LENGTH - 0,1,2,3,4,5,11,20
19417                                   ;       SOURCE 1 ADDRESS - 201 (RELATIVE TO START OF TEST BUFFER)
19418                                   ;       SOURCE 2 ADDRESS,DEST ADDRESS - NO OVERLAP OF ANY OF THE 3 STRINGS
19419                                   ;       SOURCE 1 DATA - DIGITS FROM STRING = 12345678912345678912340008912333; SIGN +
19420                                   ;       SOURCE 2 DATA - DIGITS FROM STRING = 12345678912345678912340008912333; SIGN +
19421                                   ;
19422                                   ;TOTAL # OF TEST CONDITIONS = 512
19423                                   ;TOTAL # OF TESTS = (1 DATA TYPE IN REG MODE)512 = 512
19424                                   ;
```

```
19426                                   ;ENTRY 83A - INSTRUCTION UNDER TEST = MULP
19427                                   ;
19428  102514  000026                   IMULP5: .WORD   26              ;INST=MULP
19429  102516  000003                           .WORD 3                 ;TYPE = 1(BIT 0);11/44 QV TABLE(BIT 1=1)
19430  102520  103546                           .WORD   T1H             ;IP1 - SRC1.LEN
19431  102522  103766                           .WORD   T2              ;IP2 - SRC1.ADR
19432  102524  103546                           .WORD   T1H             ;IP3 - SRC2.LEN
19433  102526  105116                           .WORD   T16A            ;IP4 - SRC2.ADR
19434  102530  103574                           .WORD   T1L             ;IP5 - DST.LEN
19435  102532  103412                           .WORD   T0              ;IP6 - DST.ADR - SPECIFIED BY T16 USED FOR IP4
19436  102534  106754                           .WORD   TP19            ;IP7 - SRC1 DATA
19437  102536  103412                           .WORD   T0              ;IP10 - SRC1 SURR DATA
19438  102540  103412                           .WORD   T0              ;IP11 - SRC1 SURR LEN
19439  102542  106754                           .WORD   TP19            ;IP12 - SRC2 DATA
19440  102544  103412                           .WORD   T0              ;IP13 - SRC2 SURR DATA
19441  102546  103412                           .WORD   T0              ;IP14 - SRC2 SURR LEN  (LENGTH SET TO 0 SO
19442                                                                   ;  AS NOT TO DESTROY ANY OF SRC1)
19443  102550  103412                           .WORD   T0              ;IP15 - DST DATA
19444  102552  103412                           .WORD   T0              ;IP16 - DST SURR DATA
19445  102554  103412                           .WORD   T0              ;IP17 - DST SURR LEN
19446  102556  105044                           .WORD   T14             ;IP20 - SEPARATION CONSTRANT
19447  102560  103662                           .WORD   TSPA            ;IP21 - SPECIAL HANDLING
19448  102562  000000                           .WORD   0               ;IP22
19449  102564  000000                           .WORD   0               ;IP23
19450  102566  000000                           .WORD   0               ;IP24
19451
19452                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
19453                                   ;
19454                                   ;       SOURCE 1 LENGTH - 12,13,14,15
19455                                   ;       SOURCE 2 LENGTH - 12,13,14,15
19456                                   ;       DESTINATION LENGTH - 35
19457                                   ;       SOURCE 1 ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER)
19458                                   ;       SOURCE 2 ADDRESS,DEST ADDRESS - NO OVERLAP OF ANY OF THE 3 STRINGS
19459                                   ;       SOURCE 1 DATA - DIGITS FROM STRING = 12345678912345678912340008912333; SIGN +
19460                                   ;       SOURCE 2 DATA - DIGITS FROM STRING = 12345678912345678912340008912333; SIGN +
19461                                   ;
19462                                   ;TOTAL # OF TEST CONDITIONS = 16
19463                                   ;TOTAL # OF TESTS = (1 DATA TYPE IN REG MODE)16 = 16
19464                                   ;
```

```
19466                                   ;ENTRY 83B - INSTRUCTION UNDER TEST = MULP
19467                                   ;
19468  102570  000026                   IMULP6: .WORD   26              ;INST=MULP
19469  102572  000003                           .WORD 3                 ;TYPE = 1(BIT 0);11/44 QV TABLE(BIT 1=1)
19470  102574  103610                           .WORD   T1N             ;IP1 - SRC1.LEN
19471  102576  103766                           .WORD   T2              ;IP2 - SRC1.ADR
19472  102600  103636                           .WORD   T1Q             ;IP3 - SRC2.LEN
19473  102602  105116                           .WORD   T16A            ;IP4 - SRC2.ADR
19474  102604  103574                           .WORD   T1L             ;IP5 - DST.LEN
19475  102606  103412                           .WORD   T0              ;IP6 - DST.ADR - SPECIFIED BY T16 USED FOR IP4
19476  102610  107012                           .WORD   TP19C           ;IP7 - SRC1 DATA
19477  102612  103412                           .WORD   T0              ;IP10 - SRC1 SURR DATA
19478  102614  103412                           .WORD   T0              ;IP11 - SRC1 SURR LEN
19479  102616  107024                           .WORD   TP19D           ;IP12 - SRC2 DATA
19480  102620  103412                           .WORD   T0              ;IP13 - SRC2 SURR DATA
19481  102622  103412                           .WORD   T0              ;IP14 - SRC2 SURR LEN  (LENGTH SET TO 0 SO
19482                                                                   ;  AS NOT TO DESTROY ANY OF SRC1)
19483  102624  103412                           .WORD   T0              ;IP15 - DST DATA
19484  102626  103412                           .WORD   T0              ;IP16 - DST SURR DATA
19485  102630  103412                           .WORD   T0              ;IP17 - DST SURR LEN
19486  102632  105044                           .WORD   T14             ;IP20 - SEPARATION CONSTRANT
19487  102634  103662                           .WORD   TSPA            ;IP21 - SPECIAL HANDLING
19488  102636  000000                           .WORD   0               ;IP22
19489  102640  000000                           .WORD   0               ;IP23
19490  102642  000000                           .WORD   0               ;IP24
19491
19492                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
19493                                   ;
19494                                   ;       SOURCE 1 LENGTH - 3
19495                                   ;       SOURCE 2 LENGTH - 0,3
19496                                   ;       DESTINATION LENGTH - 35
19497                                   ;       SOURCE 1 ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER)
19498                                   ;       SOURCE 2 ADDRESS,DEST ADDRESS - NO OVERLAP OF ANY OF THE 3 STRINGS
19499                                   ;       SOURCE 1 DATA - ALL DIGITS IDENTICAL = 0; SIGN +
19500                                   ;                       ALL DIGITS IDENTICAL = 4; SIGN +
19501                                   ;       SOURCE 2 DATA - ALL DIGITS IDENTICAL = 0; SIGN +
19502                                   ;
19503                                   ;TOTAL # OF TEST CONDITIONS = 4
19504                                   ;TOTAL # OF TESTS = (1 DATA TYPE IN REG MODE)4 = 4
```

```
19506                                   ;
19507                                   ;ENTRY 83C - INSTRUCTION UNDER TEST = MULP
19508                                   ;
19509  102644  000026                   IMULP7: .WORD   26              ;INST=MULP
19510  102646  000001                           .WORD   1               ;TYPE = 1
19511  102650  103602                           .WORD   T1M             ;IP1 - SRC1.LEN
19512  102652  103766                           .WORD   T2              ;IP2 - SRC1.ADR
19513  102654  103602                           .WORD   T1M             ;IP3 - SRC2.LEN
19514  102656  105174                           .WORD   T16B            ;IP4 - SRC2.ADR
19515  102660  105030                           .WORD   T13             ;IP5 - DST.LEN
19516  102662  103412                           .WORD   T0              ;IP6 - DST.ADR - SPECIFIED BY T16 USED FOR IP4
19517  102664  107002                           .WORD   TP19B           ;IP7 - SRC1 DATA
19518  102666  103412                           .WORD   T0              ;IP10 - SRC1 SURR DATA
19519  102670  103412                           .WORD   T0              ;IP11 - SRC1 SURR LEN
19520  102672  107002                           .WORD   TP19B           ;IP12 - SRC2 DATA
19521  102674  103412                           .WORD   T0              ;IP13 - SRC2 SURR DATA
19522  102676  103412                           .WORD   T0              ;IP14 - SRC2 SURR LEN  (LENGTH SET TO 0 SO
19523                                                                   ;  AS NOT TO DESTROY ANY OF SRC1)
19524  102700  103412                           .WORD   T0              ;IP15 - DST DATA
19525  102702  103412                           .WORD   T0              ;IP16 - DST SURR DATA
19526  102704  103412                           .WORD   T0              ;IP17 - DST SURR LEN
19527  102706  103412                           .WORD   T0              ;IP20 - SEPARATION CONSTRANT
19528  102710  103412                           .WORD   T0              ;IP21 - SPECIAL HANDLING
19529  102712  000000                           .WORD   0               ;IP22
19530  102714  000000                           .WORD   0               ;IP23
19531  102716  000000                           .WORD   0               ;IP24
19532
19533                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
19534                                   ;
19535                                   ;       SOURCE 1 LENGTH - 17
19536                                   ;       SOURCE 2 LENGTH - 17
19537                                   ;       DESTINATION LENGTH - 5
19538                                   ;       SOURCE 1 ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER)
19539                                   ;       SOURCE 2 ADDRESS - 200
19540                                   ;       DEST ADDRESS - NO OVERLAP WITH SOURCE STRINGS
19541                                   ;       SOURCE 1 DATA = SOURCE 2 DATA - 000000000000333+
19542                                   ;
19543                                   ;TOTAL # OF TEST CONDITIONS = 1
19544                                   ;TOTAL # OF TESTS = (2 DATA TYPES + 1 IN-LINE) 1 = 3
19545                                   ;
```

```
19547                                   .SBTTL          DIVP TABLES
19548                                   ;ENTRY 84 - INSTRUCTION UNDER TEST = DIVP
19549                                   ;
19550  102720  000027                   IDIVP:  .WORD   27              ;INST=DIVP
19551  102722  000003                           .WORD 3                 ;TYPE = 1(BIT 0);11/44 QV TABLE(BIT 1=1)
19552  102724  103412                           .WORD   T0              ;IP1 - SRC1.LEN
19553  102726  103766                           .WORD   T2              ;IP2 - SRC1.ADR
19554  102730  103412                           .WORD   T0              ;IP3 - SRC2.LEN
19555  102732  105416                           .WORD   T16+1           ;IP4 - SRC2.ADR
19556  102734  103416                           .WORD   XT1             ;IP5 - DST.LEN
19557  102736  103412                           .WORD   T0              ;IP6 - DST.ADR - SPECIFIED BY T16 USED FOR IP4
19558  102740  106152                           .WORD   T22             ;IP7 - SRC1 DATA
19559  102742  104742                           .WORD   T7              ;IP10 - SRC1 SURR DATA
19560  102744  104760                           .WORD   T10             ;IP11 - SRC1 SURR LEN
19561  102746  106152                           .WORD   T22             ;IP12 - SRC2 DATA
19562  102750  106024                           .WORD   T20             ;IP13 - SRC2 SURR DATA
19563  102752  103412                           .WORD   T0              ;IP14 - SRC2 SURR LEN  (LENGTH SET TO 0 SO
19564                                                                   ;  AS NOT TO DESTROY ANY OF SRC1)
19565  102754  104774                           .WORD   T11             ;IP15 - DST DATA
19566  102756  105012                           .WORD   T12             ;IP16 - DST SURR DATA
19567  102760  105030                           .WORD   T13             ;IP17 - DST SURR LEN
19568  102762  105044                           .WORD   T14             ;IP20 - SEPARATION CONSTRANT
19569  102764  103412                           .WORD   T0              ;IP21 - SPECIAL HANDLING
19570  102766  000000                           .WORD   0               ;IP22
19571  102770  000000                           .WORD   0               ;IP23
19572  102772  000000                           .WORD   0               ;IP24
19573
19574                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
19575                                   ;
19576                                   ;       SOURCE 1 LENGTH - 0
19577                                   ;       SOURCE 2 LENGTH - 0
19578                                   ;       DESTINATION LENGTH - 0,1,5
19579                                   ;       SOURCE 1 ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER)
19580                                   ;       SOURCE 2 ADDRESS,DEST ADDRESS - NO OVERLAP OF ANY OF THE 3 STRINGS
19581                                   ;                                       - SOURCE 2 STRING ADJACENT WITH DESTINATION STRING
19582                                   ;       SOURCE 1 DATA - ALL DIGITS IDENTICAL = 3; SIGN +
19583                                   ;       SOURCE 2 DATA - ALL DIGITS IDENTICAL = 3; SIGN +
19584                                   ;
19585                                   ;TOTAL # OF TEST CONDITIONS = 6
19586                                   ;TOTAL # OF TESTS = (2 DATA TYPES + 1 INLINE)6 = 18
19587                                   ;
```

```
19589                                   ;ENTRY 85 - INSTRUCTION UNDER TEST = DIVP
19590                                   ;
19591  102774  000027                   IDIVP1: .WORD   27              ;INST=DIVP
19592  102776  000001                           .WORD   1               ;TYPE = 1
19593  103000  103412                           .WORD   T0              ;IP1 - SRC1.LEN
19594  103002  103766                           .WORD   T2              ;IP2 - SRC1.ADR
19595  103004  106042                           .WORD   T21             ;IP3 - SRC2.LEN
19596  103006  105416                           .WORD   T161            ;IP4 - SRC2.ADR
19597  103010  103416                           .WORD   XT1             ;IP5 - DST.LEN
19598  103012  103412                           .WORD   T0              ;IP6 - DST.ADR - SPECIFIED BY T16 USED FOR IP4
19599  103014  106152                           .WORD   T22             ;IP7 - SRC1 DATA
19600  103016  104742                           .WORD   T7              ;IP10 - SRC1 SURR DATA
19601  103020  104760                           .WORD   T10             ;IP11 - SRC1 SURR LEN
19602  103022  105750                           .WORD   T17             ;IP12 - SRC2 DATA
19603  103024  106024                           .WORD   T20             ;IP13 - SRC2 SURR DATA
19604  103026  103412                           .WORD   T0              ;IP14 - SRC2 SURR LEN  (LENGTH SET TO 0 SO
19605                                                                   ;  AS NOT TO DESTROY ANY OF SRC1)
19606  103030  104774                           .WORD   T11             ;IP15 - DST DATA
19607  103032  105012                           .WORD   T12             ;IP16 - DST SURR DATA
19608  103034  105030                           .WORD   T13             ;IP17 - DST SURR LEN
19609  103036  105044                           .WORD   T14             ;IP20 - SEPARATION CONSTRANT
19610  103040  103412                           .WORD   T0              ;IP21 - SPECIAL HANDLING
19611  103042  000000                           .WORD   0               ;IP22
19612  103044  000000                           .WORD   0               ;IP23
19613  103046  000000                           .WORD   0               ;IP24
19614
19615                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
19616                                   ;
19617                                   ;       SOURCE 1 LENGTH - 0
19618                                   ;       SOURCE 2 LENGTH - 1,5
19619                                   ;       DESTINATION LENGTH - 0,1,5
19620                                   ;       SOURCE 1 ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER)
19621                                   ;       SOURCE 2 ADDRESS, DEST ADDRESS - NO OVERLAP OF ANY OF THE 3 STRINGS
19622                                   ;                                        - SOURCE 2 STRING ADJACENT WITH DESTINATION STRIN
19623                                   ;       SOURCE 1 DATA - ALL DIGITS IDENTICAL = 3; SIGN +
19624                                   ;       SOURCE 2 DATA - DIGTIS FROM STRING = 12345678912345678912340008912333; SIGN +
19625                                   ;                     - ALL DIGITS IDENTICAL = 5; SIGN +
19626                                   ;                     - ALL DIGITS IDENTICAL =3; SIGN -
19627                                   ;                     - ALL DIGITS IDENTICAL = 0; SIGN +
19628                                   ;
19629                                   ;TOTAL # OF TEST CONDITIONS = 48
19630                                   ;TOTAL # OF TESTS = (2 DATA TYPES + 1 INLINE)48 = 144
19631                                   ;
```

```
19633
19634                                   ;ENTRY 86 - INSTRUCTION UNDER TEST = DIVP
19635                                   ;
19636  103050  000027                   IDIVP2: .WORD   27              ;INST=DIVP
19637  103052  000001                           .WORD   1               ;TYPE = 1
19638  103054  106042                           .WORD   T21             ;IP1 - SRC1.LEN
19639  103056  103766                           .WORD   T2              ;IP2 - SRC1.ADR
19640  103060  103412                           .WORD   T0              ;IP3 - SRC2.LEN
19641  103062  105416                           .WORD   T16I            ;IP4 - SRC2.ADR
19642  103064  103416                           .WORD   XT1             ;IP5 - DST.LEN
19643  103066  103412                           .WORD   T0              ;IP6 - DST.ADR - SPECIFIED BY T16 USED FOR IP4
19644  103070  105750                           .WORD   T17             ;IP7 - SRC1 DATA
19645  103072  104742                           .WORD   T7              ;IP10 - SRC1 SURR DATA
19646  103074  104760                           .WORD   T10             ;IP11 - SRC1 SURR LEN
19647  103076  106152                           .WORD   T22             ;IP12 - SRC2 DATA
19648  103100  106024                           .WORD   T20             ;IP13 - SRC2 SURR DATA
19649  103102  103412                           .WORD   T0              ;IP14 - SRC2 SURR LEN  (LENGTH SET TO 0 SO
19650                                                                   ;  AS NOT TO DESTROY ANY OF SRC1)
19651  103104  104774                           .WORD   T11             ;IP15 - DST DATA
19652  103106  105012                           .WORD   T12             ;IP16 - DST SURR DATA
19653  103110  105030                           .WORD   T13             ;IP17 - DST SURR LEN
19654  103112  105044                           .WORD   T14             ;IP20 - SEPARATION CONSTRANT
19655  103114  103412                           .WORD   T0              ;IP21 - SPECIAL HANDLING
19656  103116  000000                           .WORD   0               ;IP22
19657  103120  000000                           .WORD   0               ;IP23
19658  103122  000000                           .WORD   0               ;IP24
19659
19660                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
19661                                   ;
19662                                   ;       SOURCE 1 LENGTH - 1,5
19663                                   ;       SOURCE 2 LENGTH - 0
19664                                   ;       DESTINATION LENGTH - 0,1,5
19665                                   ;       SOURCE 1 ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER)
19666                                   ;       SOURCE 2 ADDRESS, DEST ADDRESS - NO OVERLAP OF ANY OF THE 3 STRINGS
19667                                   ;                                      - SOURCE 2 STRING ADJACENT WITH DESTINATION STRIN
19668                                   ;       SOURCE 1 DATA - DIGITS FROM STRING = 12345678912345678912340008912333; SIGN +
19669                                   ;                     - ALL DIGITS IDENTICAL = 5; SIGN +
19670                                   ;                     - ALL DIGITS IDENTICAL = 3; SIGN -
19671                                   ;                     - ALL DIGITS IDENTICAL = 0; SIGN +
19672                                   ;       SOURCE 2 DATA - ALL DIGITS IDENTICAL = 3; SIGN +
19673                                   ;
19674                                   ;TOTAL # OF TEST CONDITIONS =48
19675                                   ;TOTAL # OF TESTS = (2 DATA TYPES + 1 INLINE)48 = 144
19676                                   ;
```

```
                                ;ENTRY 87 - INSTRUCTION UNDER TEST = DIVP
                                ;
103124  000027  IDIVP3: .WORD   27              ;INST=DIVP
103126  000001         .WORD   1               ;TYPE = 1
103130  106056         .WORD   T211            ;IP1 - SRC1.LEN
103132  103766         .WORD   T2              ;IP2 - SRC1.ADR
103134  106074         .WORD   T212            ;IP3 - SRC2.LEN
103136  105416         .WORD   T161            ;IP4 - SRC2.ADR
103140  103616         .WORD   T1?             ;IP5 - DST.LEN
103142  103412         .WORD   T0              ;IP6 - DST.ADR - SPECIFIED BY T16 USED FOR IP4
103144  105750         .WORD   T17             ;IP7 - SRC1 DATA
103146  104742         .WORD   T7              ;IP10 - SRC1 SURR DATA
103150  104760         .WORD   T10             ;IP11 - SRC1 SURR LEN
103152  105750         .WORD   T17             ;IP12 - SRC2 DATA
103154  106024         .WORD   T20             ;IP13 - SRC2 SURR DATA
103156  103412         .WORD   T0              ;IP14 - SRC2 SURR LEN  (LENGTH SET TO 0 SO
                                               ;  AS NOT TO DESTROY ANY OF SRC1)
103160  104774         .WORD   T11             ;IP15 - DST DATA
103162  105012         .WORD   T12             ;IP16 - DST SURR DATA
103164  105030         .WORD   T13             ;IP17 - DST SURR LEN
103166  105044         .WORD   T14             ;IP20 - SEPARATION CONSTRANT
103170  103412         .WORD   T0              ;IP21 - SPECIAL HANDLING
103172  000000         .WORD   0               ;IP22
103174  000000         .WORD   0               ;IP23
103176  000000         .WORD   0               ;IP24

                                ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
                                ;
                                ;       SOURCE 1 LENGTH - 1,37
                                ;       SOURCE 2 LENGTH - 1,37
                                ;       DESTINATION LENGTH - 0,1,37
                                ;       SOURCE 1 ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER)
                                ;       SOURCE 2 ADDRESS, DEST ADDRESS - NO OVERLAP OF ANY OF THE 3 STRINGS
                                ;                                        - SOURCE 2 STRING ADJACENT WITH DEST STRING
                                ;       SOURCE 1 DATA - DIGITS FROM STRING = 12345678912345678912340008912333; SIGN +
                                ;                     - ALL DIGITS IDENTICAL = 5; SIGN +
                                ;                     - ALL DIGITS IDENTICAL = 3; SIGN -
                                ;                     - ALL DIGITS IDENTICAL = 0; SIGN +
                                ;       SOURCE 2 DATA - DIGITS FROM STRING = 12345678912345678912340008912333; SIGN +
                                ;                     - ALL DIGITS IDENTICAL = 5; SIGN +
                                ;                     - ALL DIGITS IDENTICAL = 3; SIGN -
                                ;                     - ALL DIGITS IDENTICAL = 0; SIGN +
                                ;
                                ;TOTAL # OF TEST CONDITIONS = 384
                                ;TOTAL # OF TESTS = (2 DATA TYPES + 1 INLINE)384 = 1152
                                ;
```

```
19725                                   ;ENTRY 88 - INSTRUCTION UNDER TEST = DIVP
19726                                   ;
19727  103200  000027                   IDIVP4: .WORD   27              ;INST=DIVP
19728  103202  000001                           .WORD   1               ;TYPE = 1
19729  103204  103436                           .WORD   T1A             ;IP1 - SRC1.LEN
19730  103206  103776                           .WORD   T2A             ;IP2 - SRC1.ADR
19731  103210  103436                           .WORD   T1A             ;IP3 - SRC2.LEN
19732  103212  105116                           .WORD   T16A            ;IP4 - SRC2.ADR
19733  103214  103436                           .WORD   T1A             ;IP5 - DST.LEN
19734  103216  103412                           .WORD   T0              ;IP6 - DST.ADR - SPECIFIED BY T16 USED FOR IP4
19735  103220  106754                           .WORD   TP19            ;IP7 - SRC1 DATA
19736  103222  103412                           .WORD   T0              ;IP10 - SRC1 SURR DATA
19737  103224  103412                           .WORD   T0              ;IP11 - SRC1 SURR LEN
19738  103226  106754                           .WORD   TP19            ;IP12 - SRC2 DATA
19739  103230  103412                           .WORD   T0              ;IP13 - SRC2 SURR DATA
19740  103232  103412                           .WORD   T0              ;IP14 - SRC2 SURR LEN  (LENGTH SET TO 0 SO
19741                                                                   ;  AS NOT TO DESTROY ANY OF SRC1)
19742  103234  103412                           .WORD   T0              ;IP15 - DST DATA
19743  103236  103412                           .WORD   T0              ;IP16 - DST SURR DATA
19744  103240  103412                           .WORD   T0              ;IP17 - DST SURR LEN
19745  103242  105044                           .WORD   T14             ;IP20 - SEPARATION CONSTRANT
19746  103244  103662                           .WORD   TSPA            ;IP21 - SPECIAL HANDLING
19747  103246  000000                           .WORD   0               ;IP22
19748  103250  000000                           .WORD   0               ;IP23
19749  103252  000000                           .WORD   0               ;IP24
19750
19751                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
19752                                   ;
19753                                   ;       SOURCE 1 LENGTH - 0,1,2,3,4,5,11,20
19754                                   ;       SOURCE 2 LENGTH - 0,1,2,3,4,5,11,20
19755                                   ;       DESTINATION LENGTH - 0,1,2,3,4,5,11,20
19756                                   ;       SOURCE 1 ADDRESS - 201 (RELATIVE TO START OF TEST BUFFER)
19757                                   ;       SOURCE 2 ADDRESS,DEST ADDRESS - NO OVERLAP OF ANY OF THE 3 STRINGS
19758                                   ;       SOURCE 1 DATA - DIGITS FROM STRING = 12345678912345678912340008912333; SIGN +
19759                                   ;       SOURCE 2 DATA - DIGITS FROM STRING = 12345678912345678912340008912333; SIGN +
19760                                   ;
19761                                   ;TOTAL # OF TEST CONDITIONS = 512
19762                                   ;TOTAL # OF TESTS = (1 DATA TYPE IN REG MODE)512 = 512
19763                                   ;
```

```
                                ;ENTRY 88A - INSTRUCTION UNDER TEST = DIVP
                                ;
103254  000027                  IDIVP5: .WORD   27              ;INST=DIVP
103256  000003                          .WORD 3                 ;TYPE = 1(BIT 0);11/44 QV TABLE(BIT 1=1)
103260  103540                          .WORD   T1G             ;IP1 - SRC1.LEN
103262  103766                          .WORD   T2              ;IP2 - SRC1.ADR
103264  103540                          .WORD   T1G             ;IP3 - SRC2.LEN
103266  105116                          .WORD   T16A            ;IP4 - SRC2.ADR
103270  103540                          .WORD   T1G             ;IP5 - DST.LEN
103272  103412                          .WORD   T0              ;IP6 - DST.ADR - SPECIFIED BY T16 USED FOR IP4
103274  106010                          .WORD   T17A            ;IP7 - SRC1 DATA
103276  103412                          .WORD   T0              ;IP10 - SRC1 SURR DATA
103300  103412                          .WORD   T0              ;IP11 - SRC1 SURR LEN
103302  106010                          .WORD   T17A            ;IP12 - SRC2 DATA
103304  103412                          .WORD   T0              ;IP13 - SRC2 SURR DATA
103306  103412                          .WORD   T0              ;IP14 - SRC2 SURR LEN  (LENGTH SET TO 0 SO
                                                                ;  AS NOT TO DESTROY ANY OF SRC1)
103310  103412                          .WORD   T0              ;IP15 - DST DATA
103312  103412                          .WORD   T0              ;IP16 - DST SURR DATA
103314  103412                          .WORD   T0              ;IP17 - DST SURR LEN
103316  105044                          .WORD   T14             ;IP20 - SEPARATION CONSTRANT
103320  103662                          .WORD   TSPA            ;IP21 - SPECIAL HANDLING
103322  000000                          .WORD   0               ;IP22
103324  000000                          .WORD   0               ;IP23
103326  000000                          .WORD   0               ;IP24

                                ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
                                ;
                                ;       SOURCE 1 LENGTH - 11
                                ;       SOURCE 2 LENGTH - 11
                                ;       DESTINATION LENGTH - 11
                                ;       SOURCE 1 ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER)
                                ;       SOURCE 2 ADDRESS,DEST ADDRESS - NO OVERLAP OF ANY OF THE 3 STRINGS
                                ;       SOURCE 1 DATA - ALL DIGITS IDENTICAL = 7,0; SIGN = +
                                ;       SOURCE 2 DATA - ALL DIGITS IDENTICAL = 7,0; SIGN +
                                ;
                                ;TOTAL # OF TEST CONDITIONS = 4
                                ;TOTAL # OF TESTS = (1 DATA TYPE IN REG MODE)4 = 4
                                ;
```

```
19805                                   ;ENTRY 88B - INSTRUCTION UNDER TEST = DIVP
19806                                   ;
19807  103330  000027                    IDIVP6: .WORD   27              ;INST=DIVP
19808  103332  000003                            .WORD 3                 ;TYPE = 1(BIT 0);11/44 QV TABLE(BIT 1=1)
19809  103334  103646                            .WORD   T1R             ;IP1 - SRC1.LEN
19810  103336  103766                            .WORD   T2              ;IP2 - SRC1.ADR
19811  103340  103654                            .WORD   T1S             ;IP3 - SRC2.LEN
19812  103342  105116                            .WORD   T16A            ;IP4 - SRC2.ADR
19813  103344  103646                            .WORD   T1R             ;IP5 - DST.LEN
19814  103346  103412                            .WORD   T0              ;IP6 - DST.ADR - SPECIFIED BY T16 USED FOR IP4
19815  103350  107032                            .WORD   TP19E           ;IP7 - SRC1 DATA
19816  103352  103412                            .WORD   T0              ;IP10 - SRC1 SURR DATA
19817  103354  103412                            .WORD   T0              ;IP11 - SRC1 SURR LEN
19818  103356  107032                            .WORD   TP19E           ;IP12 - SRC2 DATA
19819  103360  103412                            .WORD   T0              ;IP13 - SRC2 SURR DATA
19820  103362  103412                            .WORD   T0              ;IP14 - SRC2 SURR LEN  (LENGTH SET TO 0 SO
19821                                                                   ;  AS NOT TO DESTROY ANY OF SRC1)
19822  103364  103412                            .WORD   T0              ;IP15 - DST DATA
19823  103366  103412                            .WORD   T0              ;IP16 - DST SURR DATA
19824  103370  103412                            .WORD   T0              ;IP17 - DST SURR LEN
19825  103372  105044                            .WORD   T14             ;IP20 - SEPARATION CONSTRANT
19826  103374  103662                            .WORD   TSPA            ;IP21 - SPECIAL HANDLING
19827  103376  000000                            .WORD   0               ;IP22
19828  103400  000000                            .WORD   0               ;IP23
19829  103402  000000                            .WORD   0               ;IP24
19830
19831                                   ;THIS TABLE EXERCISES ALL COMBINATIONS OF THE FOLLOWING VARIABLE ASSIGNMENTS:
19832                                   ;
19833                                   ;       SOURCE 1 LENGTH - 11
19834                                   ;       SOURCE 2 LENGTH - 21
19835                                   ;       DESTINATION LENGTH - 11
19836                                   ;       SOURCE 1 ADDRESS - 200 (RELATIVE TO START OF TEST BUFFER)
19837                                   ;       SOURCE 2 ADDRESS,DEST ADDRESS - NO OVERLAP OF ANY OF THE 3 STRINGS
19838                                   ;       SOURCE 1 DATA - ALL DIGITS IDENTICAL = 7; SIGN = +
19839                                   ;       SOURCE 2 DATA - ALL DIGITS IDENTICAL = 7; SIGN +
19840                                   ;
19841                                   ;TOTAL # OF TEST CONDITIONS = 1
19842                                   ;TOTAL # OF TESTS = (1 DATA TYPE IN REG MODE)1 = 1
19843                                   ;
```

```
19847                                   ;ENTRY 89 -
19848                                   ;
19849  103404  000000                             .WORD 0
19850  103406  000000                             .WORD 0
19851  103410  000000                             .WORD 0
```

```
19853                                   .SBTTL  PARAMETER TABLES (LENGTHS,ADDRESSES,ETC)
19854                                   ;
19855                                   ;PARAMETER TABLES
19856                                   ;
19858  103412                           T0:                             ;DUMMY TABLE - USED WHEN AN INPUT PARAMETER
19859                                                                   ;  IS ALREADY SPECIFIED BY A PRECEDING INPUT PARAMETER T
19860                                                                   ;ALSO PROVIDES A SINGLE ENTRY = 0 TABLE
19861  103412  000401                           .WORD 401
19862  103414  000000                           .WORD 0
19863
19864  103416                           XT1:
19865  103416  000403                           .WORD   403             ;FIXED LENGTH ENTRIES;1 WORD/ENTRY;3 ENTRIES
19866  103420  000000                           .WORD   0
19867  103422  000001                           .WORD   1
19868  103424  000005                           .WORD   5
19869  103426  000000                           .WORD   0
19870  103430  000000                           .WORD   0
19871  103432  000000                           .WORD   0
19872  103434  000000                           .WORD   0
19873
19874  103436  000410                   T1A:    .WORD 410
19875  103440  000000                           .WORD 0
19876  103442  000001                           .WORD 1
19877  103444  000002                           .WORD 2
19878  103446  000003                           .WORD 3
19879  103450  000004                           .WORD 4
19880  103452  000005                           .WORD 5
19881  103454  000011                           .WORD 11
19882  103456  000020                           .WORD 20
19883  103460  000000                           .WORD 0
19884
19885  103462  000403                   T1B:    .WORD 403
19886  103464  000001                           .WORD 1
19887  103466  000002                           .WORD 2
19888  103470  000003                           .WORD 3
19889  103472  000000                           .WORD 0
19890
19891  103474  000403                   T1C:    .WORD 403
19892  103476  000002                           .WORD 2
19893  103500  000004                           .WORD 4
19894  103502  000006                           .WORD 6
19895  103504  000000                           .WORD 0
19896
19897  103506  000402                   T1D:    .WORD 402
19898  103510  000001                           .WORD 1
19899  103512  000002                           .WORD 2
19900  103514  000000                           .WORD 0
19901
19902  103516  000401                   T1E:    .WORD 401
19903  103520  000002                           .WORD 2
19904  103522  000000                           .WORD 0
19905
19906  103524  000404                   T1F:    .WORD 404
19907  103526  000020                           .WORD 20
```

```
19908  103530  000016                          .WORD 16
19909  103532  000017                          .WORD 17
19910  103534  000003                          .WORD 3
19911  103536  000000                          .WORD 0
19912
19913  103540  000401                  T1G:    .WORD 401
19914  103542  000011                          .WORD 11
19915  103544  000000                          .WORD 0
19916
19917  103546  000404                  T1H:    .WORD 404
19918  103550  000012                          .WORD 12
19919  103552  000013                          .WORD 13
19920  103554  000014                          .WORD 14
19921  103556  000015                          .WORD 15
19922  103560  000000                          .WORD 0
19923
19924  103562  000404                  T1K:    .WORD 404
19925  103564  000020                          .WORD 20
19926  103566  000016                          .WORD 16
19927  103570  000017                          .WORD 17
19928  103572  000001                          .WORD 1
19929
19930  103574  000401                  T1L:    .WORD 401
19931  103576  000035                          .WORD 35
19932  103600  000000                          .WORD 0
19933
19934  103602  000401                  T1M:    .WORD 401
19935  103604  000017                          .WORD 17
19936  103606  000000                          .WORD 0
19937
19938  103610  000401                  T1N:    .WORD 401
19939  103612  000003                          .WORD 3
19940  103614  000000                          .WORD 0
19941
19942  103616  000403                  T1P:    .WORD 403
19943  103620  000000                          .WORD 0
19944  103622  000001                          .WORD 1
19945  103624  000037                          .WORD 37
19946  103626  000000                          .WORD 0
19947  103630  000000                          .WORD 0
19948  103632  000000                          .WORD 0
19949  103634  000000                          .WORD 0
19950
19951  103636  000402                  T1Q:    .WORD 402
19952  103640  000000                          .WORD 0
19953  103642  000003                          .WORD 3
19954  103644  000000                          .WORD 0
19955
19956  103646  000401                  T1R:    .WORD 401
19957  103650  000011                          .WORD 11
19958  103652  000000                          .WORD 0
19959
19960  103654  000401                  T1S:    .WORD 401
19961  103656  000021                          .WORD 21
```

```
19962  103660  000000                          .WORD 0
19963
19964  103662                          TSPA:
19965  103662  000401                          .WORD 401
19966  103664  140000                          .WORD 140000
19967  103666                          T111:
19968  103666  000403                          .WORD   403          ;FIXED LENGTH ENTRIES;1 WORD/ENTRY;3 ENTRIES
19969  103670  000000                          .WORD   0
19970  103672  000001                          .WORD   1
19971  103674  000037                          .WORD   37
19972  103676  000000                          .WORD   0
19973  103700  000000                          .WORD   0
19974  103702  000000                          .WORD   0
19975  103704  000000                          .WORD   0
19976
19977  103706                          T112:
19978  103706  000403                          .WORD   403          ;FIXED LENGTH ENTRIES;1 WORD/ENTRY;3 ENTRIES
19979  103710  000000                          .WORD   0
19980  103712  000001                          .WORD   1
19981  103714  000037                          .WORD   37
19982  103716  000000                          .WORD   0
19983  103720  000000                          .WORD   0
19984  103722  000000                          .WORD   0
19985  103724  000000                          .WORD   0
19986
19987  103726                          TL1C:
19988  103726  000403                          .WORD   403          ;FIXED LENGTH ENTRIES;1 WORD/ENTRY;3 ENTRIES
19989  103730  000000                          .WORD   0
19990  103732  000001                          .WORD   1
19991  103734  000300                          .WORD   300
19992  103736  000000                          .WORD   0
19993  103740  000000                          .WORD   0
19994  103742  000000                          .WORD   0
19995  103744  000000                          .WORD   0
19996
19997  103746                          TL2C:
19998  103746  000403                          .WORD   403          ;FIXED LENGTH ENTRIES;1 WORD/ENTRY;3 ENTRIES
19999  103750  000000                          .WORD   0
20000  103752  000001                          .WORD   1
20001  103754  000005                          .WORD   5
20002  103756  000000                          .WORD   0
20003  103760  000000                          .WORD   0
20004  103762  000000                          .WORD   0
20005  103764  000000                          .WORD   0
20006
20007  103766                          T2:
20008  103766  000401                          .WORD   401
20009  103770  000200                          .WORD   200
20010  103772  000000                          .WORD   0
20011  103774  000000                          .WORD   0
20012
20013  103776                          T2A:
20014  103776  000401                          .WORD 401
20015  104000  000201                          .WORD 201
```

```
20016  104002  000000                          .WORD 0
20017
20018  104004  000402              T2AA:       .WORD 402
20019  104006  000200                          .WORD 200
20020  104010  000201                          .WORD 201
20021  104012  000000                          .WORD 0
20022
20023  104014  000401              T2B:        .WORD 401
20024  104016  000230                          .WORD 230
20025  104020  000000                          .WORD 0
20026
20027  104022                      T4:
20028  104022  040007                          .WORD   40007          ;VARIABLE LENGTH ENTRIES;7 ENTRIES
20029  104024  013701  003636                  MOV TR1,R1             ;ENTRY 1; NO OVERLAP; TR3=TR1+TR0+SEP. CONSTANT
20030  104030  063701  003634                  ADD TR0,R1
20031  104034  067701  075556                  ADD @PTP14,R1
20032  104040  010137  003642                  MOV R1,TR3
20033  104044  000207                          RTS PC
20034  104046  000000                          0
20035  104050  013701  003636                  MOV TR1,R1             ;ENTRY 2; NO OVERLAP; TR3=TR1-TR2-SEP CONSTANT
20036  104054  163701  003640                  SUB TR2,R1
20037  104060  167701  075532                  SUB @PTP14,R1
20038  104064  010137  003642                  MOV R1,TR3
20039  104070  000207                          RTS PC
20040  104072  000000                          0
20041  104074  005737  003634                  TST TR0
20042  104100  001465                          BEQ 1$
20043  104102  013701  003636                  MOV TR1,R1             ;ENTRY 3; ADJACENT; TR3=TR1+TR0
20044  104106  063701  003634                  ADD TR0,R1             ;REDUNDANT WITH ENTRY 7 IF TR0=0
20045  104112  010137  003642                  MOV R1,TR3
20046  104116  000207                          RTS PC
20047  104120  000000                          0
20048  104122  005737  003640                  TST TR2
20049  104126  001452                          BEQ 1$
20050  104130  013701  003636                  MOV TR1,R1             ;ENTRY 4; ADJACENT; TR3=TR1-TR2
20051  104134  163701  003640                  SUB TR2,R1             ;REDUNDANT WITH ENTRY 7 IF TR2=0
20052  104140  010137  003642                  MOV R1,TR3
20053  104144  000207                          RTS PC
20054  104146  000000                          0
20055  104150  013701  003634                  MOV TR0,R1             ;ENTRY 5; PARTIAL OVERLAP; TR3=TR1+TR0-(TR2/2)
20056  104154  013702  003640                  MOV TR2,R2             ;REDUNDANT WITH ENTRY 7 IF TR0-(TR2/2)=0
20057  104160  006202                          ASR R2
20058  104162  160201                          SUB R2,R1
20059  104164  005701                          TST R1
20060  104166  001432                          BEQ 1$
20061  104170  063701  003636                  ADD TR1,R1
20062  104174  010137  003642                  MOV R1,TR3
20063  104200  000207                          RTS PC
20064  104202  000000                          0
20065  104204  005737  003634                  TST TR0
20066  104210  001421                          BEQ 1$
20067  104212  013701  003636                  MOV TR1,R1             ;ENTRY 6; PARTIAL OVERLAP; TR3=TR1-(TR2/2)
20068  104216  013702  003640                  MOV TR2,R2             ;REDUNDANT WITH ENTRY 5 IF TR0=0
20069  104222  006202                          ASR R2                 ;REDUNDANT WITH ENTRY 7 IF TR2/2 =0
```

```
20070  104224  005702                          TST R2
20071  104226  001412                          BEQ 1$
20072  104230  160201                          SUB R2,R1
20073  104232  010137  003642                  MOV R1,TR3
20074  104236  000207                          RTS PC
20075  104240  000000                          0
20076  104242  013737  003636  003642          MOV TR1,TR3          ;ENTRY 7; COMPLETE OVERLAP; TR3=TR1
20077  104250  000207                          RTS PC
20078  104252  000000                          0
20079  104254  062706  000002          1$:     ADD #2,SP            ;FIXUP STACK POINTER
20080  104260  000137  042500                  JMP REDNTC           ;SKIP ENTRY TEST CONDITION - REDUNDANT
20081
20082  104264                          T4A:
20083  104264  040002                          .WORD 40002          ;VARIABLE LENGTH ENTRIES; 2 ENTRIES
20084  104266  013701  003634                  MOV TR0,R1           ;ENTRY 1; PARTIAL OVERLAP; TR3=TR1+TR0-(TR2/2)
20085  104272  013702  003640                  MOV TR2,R2
20086  104276  006202                          ASR R2
20087  104300  160201                          SUB R2,R1
20088  104302  063701  003636                  ADD TR1,R1
20089  104306  010137  003642                  MOV R1,TR3
20090  104312  000207                          RTS PC
20091  104314  000000                          0
20092  104316  013701  003636                  MOV TR1,R1           ;ENTRY 2; PARTIAL OVERLAP; TR3=TR1-(TR2/2)
20093  104322  013702  003640                  MOV TR2,R2
20094  104326  006202                          ASR R2
20095  104330  160201                          SUB R2,R1
20096  104332  010137  003642                  MOV R1,TR3
20097  104336  000207                          RTS PC
20098  104340  000000                          0
20099  104342                          T4I:
20100  104342  040007                          .WORD   40007        ;VARIABLE LENGTH ENTRIES;7 ENTRIES
20101  104344  013701  003642                  MOV TR3,R1           ;ENTRY 1; NO OVERLAP; TR1=TR2+TR3  +SEP. CONSTANT
20102  104350  063701  003640                  ADD TR2,R1
20103  104354  067701  075236                  ADD @PTP14,R1
20104  104360  010137  003636                  MOV R1,TR1
20105  104364  000207                          RTS PC
20106  104366  000000                          0
20107  104370  013701  003642                  MOV TR3,R1           ;ENTRY 2: NO OVERLAP; TR1=TR3-TR0-SEP CONSTANT
20108  104374  163701  003634                  SUB TR0,R1
20109  104400  167701  075212                  SUB @PTP14,R1
20110  104404  010137  003636                  MOV R1,TR1
20111  104410  000207                          RTS PC
20112  104412  000000                          0
20113  104414  005737  003640                  TST TR2
20114  104420  001465                          BEQ 1$
20115  104422  013701  003642                  MOV TR3,R1           ;ENTRY 3; ADJACENT; TR1=TR3+TR2
20116  104426  063701  003640                  ADD TR2,R1           ;REDUNDANT WITH ENTRY 7 IF TR2=0
20117  104432  010137  003636                  MOV R1,TR1
20118  104436  000207                          RTS PC
20119  104440  000000                          0
20120  104442  005737  003634                  TST TR0
20121  104446  001452                          BEQ 1$
20122  104450  013701  003642                  MOV TR3,R1           ;ENTRY 4; ADJACENT; TR1=TR3-TR0
20123  104454  163701  003634                  SUB TR0,R1           ;REDUNDANT WITH ENTRY 7 IF TR0=0
```

```
20124  104460  010137  003636                  MOV R1,TR1
20125  104464  000207                          RTS PC
20126  104466  000000                          0
20127  104470  013701  003640                  MOV TR2,R1          ;ENTRY 5; PARTIAL OVERLAP; TR1=TR3+TR2-(TR0/2)
20128  104474  013702  003634                  MOV TR0,R2          ;REDUNDANT WITH ENTRY 7 IF TR2-(TR0/2)=0
20129  104500  006202                          ASR R2
20130  104502  160201                          SUB R2,R1
20131  104504  005701                          TST R1
20132  104506  001432                          BEQ 1$
20133  104510  063701  003642                  ADD TR3,R1
20134  104514  010137  003636                  MOV R1,TR1
20135  104520  000207                          RTS PC
20136  104522  000000                          0
20137  104524  005737  003640                  TST TR2
20138  104530  001421                          BEQ 1$
20139  104532  013701  003642                  MOV TR3,R1          ;ENTRY 6; PARTIAL OVERLAP; TR1=TR3-(TR0/2)
20140  104536  013702  003634                  MOV TR0,R2          ;REDUNDANT WITH ENTRY 5 IF TR2=0
20141  104542  006202                          ASR R2              ;REDUNDANT WITH ENTRY 7 IF TR0/2 =0
20142  104544  005702                          TST R2
20143  104546  001412                          BEQ 1$
20144  104550  160201                          SUB R2,R1
20145  104552  010137  003636                  MOV R1,TR1
20146  104556  000207                          RTS PC
20147  104560  000000                          0
20148  104562  013737  003642  003636          MOV TR3,TR1         ;ENTRY 7; COMPLETE OVERLAP; TR1=TR3
20149  104570  000207                          RTS PC
20150  104572  000000                          0
20151  104574  062706  000002          1$:     ADD #2,SP           ;FIXUP STACK POINTER
20152  104600  000137  042500                  JMP REDNTC          ;SKIP ENTRY TEST CONDITION - REDUNDANT
20153
20154  104604                          T4IA:
20155  104604  040001                          .WORD 40001
20156  104606  013701  003642                  MOV TR3,R1
20157  104612  063701  003640                  ADD TR2,R1
20158  104616  067701  074774                  ADD @PTP14,R1
20159  104622  010137  003636                  MOV R1,TR1
20160  104626  000207                          RTS PC
20161  104630  000000                          0
20162  104632                          T411:
20163  104632  040001                          .WORD   40001       ;VARIABLE LENGTH ENTRY;1 ENTRY
20164  104634  013701  003636                  MOV TR1,R1          ;ENTRY 1; NO OVERLAP; TR3=TR1+TR0+SEP. CONSTANT
20165  104640  063701  003634                  ADD TR0,R1
20166  104644  067701  074746                  ADD @PTP14,R1
20167  104650  010137  003642                  MOV R1,TR3
20168  104654  000207                          RTS PC
20169  104656  000000                          0
20170  104660                          T5:
20171  104660  000401                          .WORD   401
20172  104662  000377                          .WORD   377
20173  104664  000000                          .WORD   0
20174  104666  000000                          .WORD   0
20175  104670  000000                          .WORD   0
20176
20177  104672                          T511:
```

```
20178  104672  000403                          .WORD 403
20179  104674  000201                          .WORD 201
20180  104676  000377                          .WORD 377
20181  104700  000127                          .WORD 127
20182  104702  000000                          .WORD 0
20183  104704  000000                          .WORD 0
20184  104706  000000                          .WORD 0
20185
20186  104710                          T6:
20187  104710  040001                          .WORD   40001           ;DATA DESCRIPTOR ENTRIES;# OF ENTRIES=1
20188  104712  020001                          .WORD   020001          ;ENTRY TYPE =1; STARTING BYTE=1;INCREMENT=1
20189  104714  000001                          .WORD   1
20190  104716  000000                          .WORD   0
20191  104720  000000                          .WORD   0
20192  104722  000000                          .WORD   0
20193  104724  000000                          .WORD   0
20194  104726  000000                          .WORD   0
20195  104730  000000                          .WORD   0
20196
20197  104732                          T6A:
20198  104732  040001                          .WORD   40001           ;DATA DESCRIPTOR ENTRIES;# OF ENTRIES=1
20199  104734  020001                          .WORD   020001          ;ENTRY TYPE =1; STARTING BYTE=0;INCREMENT=1
20200  104736  000000                          .WORD   0
20201  104740  000000                          .WORD   0
20202  104742                          T7:
20203  104742  040001                          .WORD   40001           ;DATA DESCRIPTOR ENTRIES;# OF ENTRIES=1
20204  104744  000240                          .WORD   240             ;ENTRY TYPE=0; ALL BYTES IDENTICAL=240
20205  104746  000000                          .WORD   0
20206  104750  000000                          .WORD   0
20207  104752  000000                          .WORD   0
20208  104754  000000                          .WORD   0
20209  104756  000000                          .WORD   0
20210
20211  104760                          T10:
20212  104760  000401                          .WORD   401
20213  104762  000003                          .WORD   3
20214  104764  000000                          .WORD   0
20215  104766  000000                          .WORD   0
20216  104770  000000                          .WORD   0
20217  104772  000000                          .WORD   0
20218
20219  104774                          T11:
20220  104774  040001                          .WORD   40001           ;DATA DESCRIPTOR ENTRIES; # OF ENTRIES=1
20221  104776  000252                          .WORD   252             ;ENTRY TYPE=0; ALL BYTES IDENTICAL =252
20222  105000  000000                          .WORD   0
20223  105002  000000                          .WORD   0
20224  105004  000000                          .WORD   0
20225  105006  000000                          .WORD   0
20226  105010  000000                          .WORD   0
20227
20228  105012                          T12:
20229  105012  040001                          .WORD   40001           ;DATA DESCRIPTOR ENTRIES; # OF ENTRIES=1
20230  105014  000360                          .WORD   360             ;ENTRY TYPE=0; ALL BYTES IDENTICAL = 360
20231  105016  000000                          .WORD   0
```

```
20232  105020  000000                          .WORD   0
20233  105022  000000                          .WORD   0
20234  105024  000000                          .WORD   0
20235  105026  000000                          .WORD   0
20236
20237  105030                          T13:
20238  105030  000401                          .WORD   401
20239  105032  000005                          .WORD   5
20240  105034  000000                          .WORD   0
20241  105036  000000                          .WORD   0
20242  105040  000000                          .WORD   0
20243  105042  000000                          .WORD   0
20244
20245  105044                          T14:
20246  105044  000401                          .WORD   401
20247  105046  000010                          .WORD   10
20248  105050  000000                          .WORD   0
20249  105052  000000                          .WORD   0
20250  105054  000000                          .WORD   0
20251
20252  105056                          T14A:
20253  105056  000401                          .WORD 401
20254  105060  000100                          .WORD 100
20255  105062  000000                          .WORD   0
20256  105064  000000                          .WORD   0
20257  105066  000000                          .WORD   0
20258
20259  105070                          T15:
20260  105070  000403                          .WORD   403
20261  105072  000004                          .WORD   4
20262  105074  000375                          .WORD   375
20263  105076  000240                          .WORD   240
20264  105100  000000                          .WORD   0
20265  105102  000000                          .WORD   0
20266  105104  000000                          .WORD   0
20267  105106  000000                          .WORD   0
20268
20269  105110                          T15A:
20270  105110  000401                          .WORD 401
20271  105112  000004                          .WORD 4
20272  105114  000000                          .WORD 0
20273  105116                          T16A:
20274  105116  040001                          .WORD 40001             ;FOR USE WITH PACKED STRINGS ONLY
20275  105120  113701  003634                  MOVB TR0,R1             ;ENTRY 1; NO OVERLAP
20276  105124  006201                          ASR R1                  ;TR3=TR1+[(TR0/2)+1]+SEP. CONST.
20277  105126  005201                          INC R1                  ;TR5=TR3+[(TR2/2)+1]+SEP. CONST
20278  105130  063701  003636                  ADD TR1,R1
20279  105134  067701  074466                  ADD @PTP20,R1
20280  105140  010137  003642                  MOV R1,TR3
20281  105144  113701  003640                  MOVB TR2,R1
20282  105150  006201                          ASR R1
20283  105152  005201                          INC R1
20284  105154  063701  003642                  ADD TR3,R1
20285  105160  067701  074442                  ADD @PTP20,R1
```

```
20286  105164  010137  003646                  MOV R1,TR5
20287  105170  000207                          RTS PC
20288  105172  000000                          0
20289
20290  105174  040001                  T16B:   .WORD 40001             ;FOR USE WITH PACKED STRINGS ONLY
20291  105176  013737  003636  003642          MOV TR1,TR3             ;S1A=S2A; S1 = S2
20292  105204  113701  003640                  MOVB TR2,R1             ;DA = S2A+[(S2L/2)+1]+SEP CONST
20293  105210  006201                          ASR R1
20294  105212  005201                          INC R1
20295  105214  063701  003642                  ADD TR3,R1
20296  105220  067701  074402                  ADD @PTP20,R1
20297  105224  010137  003646                  MOV R1,TR5
20298  105230  000207                          RTS PC
20299  105232  000000                          0
20300
20301  105234                          T16:
20302  105234  040002                          .WORD   40002           ;FOR USE WITH PACKED STRINGS ONLY
20303  105236  113701  003634                  MOVB TR0,R1             ;ENTRY 1; NO OVERLAP
20304  105242  006201                          ASR R1                  ;   TR3=TR1+[(TR0/2)+1]+SEP. CONSTANT
20305  105244  005201                          INC R1                  ;   TR5=TR3+[(TR2/2)+1]+SEP. CONSTANT
20306  105246  063701  003636                  ADD TR1,R1
20307  105252  067701  074350                  ADD @PTP20,R1
20308  105256  010137  003642                  MOV R1,TR3
20309  105262  113701  003640                  MOVB TR2,R1
20310  105266  006201                          ASR R1
20311  105270  005201                          INC R1
20312  105272  063701  003642                  ADD TR3,R1
20313  105276  067701  074324                  ADD @PTP20,R1
20314  105302  010137  003646                  MOV R1,TR5
20315  105306  000207                          RTS PC
20316  105310  000000                          0
20317  105312  113701  003634                  MOVB TR0,R1             ;ENTRY 2; ALIGNED SRC2 - DST
20318  105316  006201                          ASR R1                  ;   TR3=TR1+[(TR0/2)+1]+SEP. CONSTANT
20319  105320  005201                          INC R1                  ;   TR5=TR3+(TR2/2)-(TR4/2)
20320  105322  063701  003636                  ADD TR1,R1
20321  105326  067701  074274                  ADD @PTP20,R1
20322  105332  010137  003642                  MOV R1,TR3
20323  105336  113701  003640                  MOVB TR2,R1
20324  105342  006201                          ASR R1
20325  105344  113702  003644                  MOVB TR4,R2
20326  105350  006202                          ASR R2
20327  105352  160201                          SUB R2,R1
20328  105354  063701  003642                  ADD TR3,R1
20329  105360  010137  003646                  MOV R1,TR5
20330  105364  013701  003642                  MOV TR3,R1              ;DST MUST NOT OVERLAP SRC1
20331  105370  167701  074232                  SUB @PTP20,R1           ;FIND END OF SRC1
20332  105374  023701  003646                  CMP TR5,R1              ;COMPARE END WITH START OF DST
20333  105400  103401                          BLO 1$                  ;OVERLAP-SKIP TEST CONDITION
20334  105402  000207                          RTS PC
20335  105404  062706  000002          1$:     ADD #2,SP               ;FIXUP STACK POINTER
20336  105410  000137  042764                  JMP NXTC                ;SKIP TEST CONDITION - INVALID
20337  105414  000000                          0
20338
20339  105416                          1161:
```

```
20340  105416  040002                          .WORD   40002          ;FOR USE WITH PACKED STRINGS ONLY
20341  105420  113701  003634                  MOVB TR0,R1            ;ENTRY 1; NO OVERLAP
20342  105424  006201                          ASR R1                 ;  TR3=TR1+[(TR0/2)+1]+SEP. CONSTANT
20343  105426  005201                          INC R1                 ;  TR5=TR3+[(TR2/2)+1]+SEP. CONSTANT
20344  105430  063701  003636                  ADD TR1,R1
20345  105434  067701  074166                  ADD @PTP20,R1
20346  105440  010137  003642                  MOV R1,TR3
20347  105444  113701  003640                  MOVB TR2,R1
20348  105450  006201                          ASR R1
20349  105452  005201                          INC R1
20350  105454  063701  003642                  ADD TR3,R1
20351  105460  067701  074142                  ADD @PTP20,R1
20352  105464  010137  003646                  MOV R1,TR5
20353  105470  000207                          RTS PC
20354  105472  000000                          0
20355  105474  113701  003634                  MOVB TR0,R1            ;ENTRY 2; ADJACENT
20356  105500  006201                          ASR R1                 ;  TR3=TR1+(TR0/2)+1
20357  105502  005201                          INC R1                 ;  TR5=TR3+(TR2/2)+1
20358  105504  063701  003636                  ADD TR1,R1
20359  105510  010137  003642                  MOV R1,TR3
20360  105514  113701  003640                  MOVB TR2,R1
20361  105520  006201                          ASR R1
20362  105522  005201                          INC R1
20363  105524  063701  003642                  ADD TR3,R1
20364  105530  010137  003646                  MOV R1,TR5
20365  105534  000207                          RTS PC
20366  105536  000000                          0
20367
20368  105540                          T16ZA:
20369  105540  040001                          .WORD 40001
20370  105542  113701  003634                  MOVB TR0,R1            ;ENTRY 1: NO OVERLAP
20371  105546  063701  003636                  ADD TR1,R1             ;  TR3=TR1+TR0+SEP CONST
20372  105552  067701  074050                  ADD @PTP20,R1          ;  TR5=TR3+TR2+SEP CONST
20373  105556  010137  003642                  MOV R1,TR3
20374  105562  113701  003640                  MOVB TR2,R1
20375  105566  063701  003642                  ADD TR3,R1
20376  105572  067701  074030                  ADD @PTP20,R1
20377  105576  010137  003646                  MOV R1,TR5
20378  105602  000207                          RTS PC
20379  105604  000000                          0
20380  105606                          T16Z:                          ;FOR USE WITH ZONED STRINGS
20381  105606  040002                          .WORD 40002
20382  105610  113701  003634                  MOVB TR0,R1            ;ENTRY 1: NO OVERLAP
20383  105614  063701  003636                  ADD TR1,R1             ;  TR3=TR1+TR0+SEP CONST
20384  105620  067701  074002                  ADD @PTP20,R1          ;  TR5=TR3+TR2+SEP CONST
20385  105624  010137  003642                  MOV R1,TR3
20386  105630  113701  003640                  MOVB TR2,R1
20387  105634  063701  003642                  ADD TR3,R1
20388  105640  067701  073762                  ADD @PTP20,R1
20389  105644  010137  003646                  MOV R1,TR5
20390  105650  000207                          RTS PC
20391  105652  000000                          0
20392  105654  113701  003634                  MOVB TR0,R1            ;ENTRY 2 - ALIGNED SRC2 - DST
20393  105660  063701  003636                  ADD TR1,R1             ;  TR3=TR1+TR0+SEP CONST
```

```
20394  105664  067701  073736                  ADD @PTP20,R1           ;  TR5=TR3+TR2-TR4
20395  105670  010137  003642                  MOV R1,TR3
20396  105674  113701  003640                  MOVB TR2,R1
20397  105700  063701  003642                  ADD TR3,R1
20398  105704  113702  003644                  MOVB TR4,R2
20399  105710  160201                          SUB R2,R1
20400  105712  010137  003646                  MOV R1,TR5
20401  105716  013701  003642                  MOV TR3,R1              ;DST MUST NOT OVERLAP SRC1
20402  105722  167701  073700                  SUB @PTP20,R1           ;FIND END OF SRC1
20403  105726  023701  003646                  CMP TR5,R1              ;COMPARE END WITH START OF DST
20404  105732  103401                          BLO 1$
20405  105734  000207                          RTS PC
20406  105736  062706  000002          1$:     ADD #2,SP               ;FIXUP STACK POINTER
20407  105742  000137  042764                  JMP NXTC                ;SKIP TEST CONDITION - INVALID
20408  105746  000000                          0
20409
20410  105750                          T17:
20411  105750  040004                          .WORD   40004
20412  105752  100037                          .WORD   100037          ;DATA DESCRIPTOR TYPE 4 - PACKED STRING,
20413  105754  003370                          .WORD SSTG12            ;  PRE SPECIFIED STRING;SIGN POSITIVE
20414  105756  000000                          .WORD   0
20415  105760  060134                          .WORD   060134          ;DATA DESCRIPTOR TYPE 3 - PACKED STRING;
20416                                                                  ;  ALL DIGITS IDENTICAL = 5; SIGN POSTIIVE
20417  105762  000000                          .WORD   0
20418  105764  060075                          .WORD   060075          ;DATA DESCRIPTOR TYPE 3 - PACKED STRING;
20419                                                                  ;  ALL DIGITS IDENTICAL = 3; SIGN NEGATIVE
20420  105766  000000                          .WORD   0
20421  105770  060014                          .WORD   060014          ;DATA DESCRIPTOR TYPE 3 - PACKED STRING;
20422                                                                  ;  ALL DIGITS IDENTICAL = 0; SIGN POSITIVE
20423  105772  000000                          .WORD 0
20424  105774  000000                          .WORD 0
20425  105776  000000                          .WORD 0
20426  106000  000000                          .WORD 0
20427  106002  000000                          .WORD 0
20428  106004  000000                          .WORD 0
20429  106006  000000                          .WORD 0
20430
20431  106010  040002          T17A:   .WORD 40002
20432  106012  060174                  .WORD 060174            ;ALL DIGITS = 7+
20433  106014  000000                  .WORD 0
20434  106016  060014                  .WORD 060014            ;ALL DIGITS = 0+
20435  106020  000000                  .WORD 0
20436  106022  000000                  .WORD 0
20437  106024                  T20:
20438  106024  040001                  .WORD   40001           ;DATA DESCRIPTOR TYPE ENTRIES; # OF ENTRIES=1
20439  106026  000127                  .WORD   127             ;ENTRY TYPE=0; ALL BYTES IDENTICAL = 127
20440  106030  000000                  .WORD   0
20441  106032  000000                  .WORD   0
20442  106034  000000                  .WORD   0
20443  106036  000000                  .WORD   0
20444  106040  000000                  .WORD   0
20445
20446  106042                  T21:
20447  106042  000402                  .WORD 402
```

```
20448  106044  000001                          .WORD 1
20449  106046  000005                          .WORD 5
20450  106050  000000                          .WORD 0
20451  106052  000000                          .WORD 0
20452  106054  000000                          .WORD 0
20453
20454  106056                          T211:
20455  106056  000402                          .WORD 402
20456  106060  000001                          .WORD 1
20457  106062  000037                          .WORD 37
20458  106064  000000                          .WORD 0
20459  106066  000000                          .WORD 0
20460  106070  000000                          .WORD 0
20461  106072  000000                          .WORD 0
20462
20463  106074                          T212:
20464  106074  000402                          .WORD 402
20465  106076  000001                          .WORD 1
20466  106100  000037                          .WORD 37
20467  106102  000000                          .WORD 0
20468  106104  000000                          .WORD 0
20469  106106  000000                          .WORD 0
20470  106110  000000                          .WORD 0
20471  106112  000000                          .WORD 0
20472
20473  106114                          TL21C:
20474  106114  000402                          .WORD 402
20475  106116  000001                          .WORD 1
20476  106120  000005                          .WORD 5
20477  106122  000000                          .WORD 0
20478  106124  000000                          .WORD 0
20479  106126  000000                          .WORD 0
20480  106130  000000                          .WORD 0
20481
20482  106132                          TL22C:
20483  106132  000402                          .WORD 402
20484  106134  000001                          .WORD 1
20485  106136  000005                          .WORD 5
20486  106140  000000                          .WORD 0
20487  106142  000000                          .WORD 0
20488  106144  000000                          .WORD 0
20489  106146  000000                          .WORD 0
20490  106150  000000                          .WORD 0
20491
20492  106152                          T22:
20493  106152  040001                          .WORD 40001             ;DATA DESCRIPTOR TYPE 3 - PACKED STRING
20494  106154  060074                          .WORD 060074            ;  ALL DIGITS IDENTICAL = 3; SIGN POSITIVE
20495  106156  000000                          .WORD 0
20496  106160  000000                          .WORD 0
20497  106162  000000                          .WORD 0
20498  106164  000000                          .WORD 0
20499  106166  000000                          .WORD 0
20500  106170  000000                          .WORD 0
20501
```

```
20502  106172                          T23:
20503  106172  040001                          .WORD 40001             ;DATA DESCRIPTOR TYPE ENTRIES; # OF ENTRIES = 1
20504  106174  000120                          .WORD 120               ;ENTRY TYPE=0; ALL BYTES IDENTICAL = 120
20505  106176  000000                          .WORD 0
20506  106200  000000                          .WORD 0
20507  106202  000000                          .WORD 0
20508  106204  000000                          .WORD 0
20509  106206  000000                          .WORD 0
20510
20511  106210                          T24:
20512  106210  000401                          .WORD 401
20513  106212  120606                          .WORD XLTBL1
20514  106214  000000                          .WORD 0
20515  106216  000000                          .WORD 0
20516  106220  000000                          .WORD 0
20517  106222  000000                          .WORD 0
20518
20519  106224                          T25:
20520  106224  000402                          .WORD 402
20521  106226  000001                          .WORD 1
20522  106230  000240                          .WORD 240
20523  106232  000000                          .WORD 0
20524  106234  000000                          .WORD 0
20525  106236  000000                          .WORD 0
20526  106240  000000                          .WORD 0
20527
20528  106242                          T25A:
20529  106242  000401                          .WORD 401
20530  106244  000007                          .WORD 007
20531  106246  000000                          .WORD 0
20532  106250                          T26:
20533  106250  001001                          .WORD 1001
20534  106252  040003                          .WORD 040003    ;DATA DESCRIPTOR TYPE 2 - CHAR STRING
20535  106254  003250                          .WORD SSTG1             ;  STRING PRE-SPECIFIED AT SSTG1.
20536  106256  000000                          .WORD 0
20537  106260  000000                          .WORD 0
20538  106262  000000                          .WORD 0
20539  106264  000000                          .WORD 0
20540
20541  106266                          T27:
20542  106266  000401                          .WORD 401
20543  106270  000256                          .WORD 256               ;TABLE LENGTH = 256 BYTES
20544  106272  000000                          .WORD 0
20545  106274  000000                          .WORD 0
20546  106276  000000                          .WORD 0
20547  106300  000000                          .WORD 0
20548
20549  106302                          T30:
20550  106302  000403                          .WORD 403
20551  106304  000000                          .WORD 0
20552  106306  000001                          .WORD 1
20553  106310  000377                          .WORD 377
20554  106312  000000                          .WORD 0
20555  106314  000000                          .WORD 0
```

```
20556  106316  000000                          .WORD 0
20557  106320  000000                          .WORD 0
20558  106322                          T30A:
20559  106322  000401                          .WORD 401
20560  106324  000252                          .WORD 252
20561  106326  000000                          .WORD 0
20562  106330                          T31A:
20563  106330  040001                          .WORD 40001
20564  106332  013701  003634                  MOV TR0,R1              ;ENTRY 1; NO OVERLAP
20565  106336  063701  003636                  ADD TR1,R1              ;TR5 = TR0+TR1+SEP CONSTANT
20566  106342  067701  073250                  ADD @PTP14,R1
20567  106346  010137  003646                  MOV R1,TR5
20568  106352  000207                          RTS PC
20569  106354  000000                          0
20570  106356                          T31:
20571  106356  040002                          .WORD 40002
20572  106360  013701  003634                  MOV TR0,R1              ;ENTRY 1; NO OVERLAP
20573  106364  063701  003636                  ADD TR1,R1              ;TR5 = TR0+TR1+SEP CONSTANT
20574  106370  067701  073222                  ADD @PTP14,R1
20575  106374  010137  003646                  MOV R1,TR5
20576  106400  000207                          RTS PC
20577  106402  000000                          0
20578  106404  013737  003636  003646          MOV TR1,TR5             ;ENTRY 2; OVERLAP
20579  106412  000207                          RTS PC                  ;TR5 = TR1
20580  106414  000000                          0
20581
20582  106416                          T32:
20583  106416  040003                          .WORD 40003             ;DATA DESCRIPTOR ENTRIES; # OF ENTRIES = 3
20584  106420  001000                          .WORD 1000              ;ENTRY TYPE 0;  ALL BYTES IDENTICAL = 0
20585                                                                  ;  NOTE: 1000 RATHER THAN 0 IS USED HERE BECAUSE
20586                                                                  ;        0 CAN BE USED ONLY FOR DELIMITING TABLE
20587                                                                  ;        ENTRIES.
20588  106422  000000                          .WORD 0                 ;ENTRY DELIMITER.
20589  106424  000377                          .WORD 377               ;ENTRY TYPE 0;  ALL BYTES IDENTICAL = 377
20590  106426  000000                          .WORD 0
20591  106430  020001                          .WORD 20001             ;ENTRY TYPE=1;STARTING BYTE=1;INC=1
20592  106432  000001                          .WORD 1
20593  106434  000000                          .WORD 0
20594  106436  000000                          .WORD 0
20595  106440  000000                          .WORD 0
20596  106442  000000                          .WORD 0
20597  106444  000000                          .WORD 0
20598
20599  106446                          T33:
20600  106446  000403                          .WORD 403
20601  106450  000000                          .WORD 0
20602  106452  000001                          .WORD 1
20603  106454  000020                          .WORD 20
20604  106456  000000                          .WORD 0
20605  106460  000000                          .WORD 0
20606  106462  000000                          .WORD 0
20607  106464  000000                          .WORD 0
20608
20609  106466  000401              T33A:       .WORD 401
```

```
20610  106470  000012                          .WORD 12
20611  106472  000000                          .WORD 0
20612  106474  000000                          .WORD 0
20613  106476  000000                          .WORD 0
20614  106500  000000                          .WORD 0
20615
20616  106502                          T331:
20617  106502  000403                          .WORD 403
20618  106504  000000                          .WORD 0
20619  106506  000001                          .WORD 1
20620  106510  000037                          .WORD 37
20621  106512  000000                          .WORD 0
20622  106514  000000                          .WORD 0
20623  106516  000000                          .WORD 0
20624  106520  000000                          .WORD 0
20625  106522                          T332:
20626  106522  000403                          .WORD 403
20627  106524  000000                          .WORD 0
20628  106526  000001                          .WORD 1
20629  106530  000037                          .WORD 37
20630  106532  000000                          .WORD 0
20631  106534  000000                          .WORD 0
20632  106536  000000                          .WORD 0
20633  106540  000000                          .WORD 0
20634
20635  106542  000401                  T333:   .WORD 401
20636  106544  000037                          .WORD 37
20637  106546  000000                          .WORD 0
20638  106550  000000                          .WORD 0
20639  106552  000000                          .WORD 0
20640  106554  000000                          .WORD 0
20641
20642  106556                          T34A:
20643  106556  040001                          .WORD 40001
20644  106560  113701  003634                  MOVB TR0,R1             ;ENTRY 1; NO OVERLAP
20645  106564  006201                          ASR R1
20646  106566  005201                          INC R1                  ;NOTE: SRC IS PACKED, THEREFORE # BYTES = # (DIGITS/2)+
20647  106570  063701  003636                  ADD TR1,R1              ;TR3 = TR1+[(TR0/2)+1] + SEP CONSTANT
20648  106574  067701  073014                  ADD @PTP13,R1
20649  106600  010137  003642                  MOV R1,TR3
20650  106604  000207                          RTS PC
20651  106606  000000                          0
20652  106610                          T34:
20653  106610  040002                          .WORD 40002
20654  106612  113701  003634                  MOVB TR0,R1             ;ENTRY 1; NO OVERLAP
20655  106616  006201                          ASR R1
20656  106620  005201                          INC R1                  ;NOTE: SRC IS PACKED, THEREFORE # BYTES = # (DIGITS/2)+
20657  106622  063701  003636                  ADD TR1,R1              ;TR3 = TR1+[(TR0/2)+1] + SEP CONSTANT
20658  106626  067701  072762                  ADD @PTP13,R1
20659  106632  010137  003642                  MOV R1,TR3
20660  106636  000207                          RTS PC
20661  106640  000000                          0
20662  106642  113701  003634                  MOVB TR0,R1             ;ENTRY 2; ADJACENT
20663  106646  006201                          ASR R1                  ; TR3 = TR1+[(TR0/2)+1]
```

```
20664  106650  005201                          INC R1
20665  106652  063701  003636                  ADD TR1,R1
20666  106656  010137  003642                  MOV R1,TR3
20667  106662  000207                          RTS PC
20668  106664  000000                          0
20669
20670  106666                          T35:
20671  106666  040003                          .WORD 40003
20672  106670  060074                          .WORD 060074          ;DATA DESCRIPTOR TYPE 3 - PACKED STRING
20673                                                                ;  ALL DIGITS IDENTICAL=3; SIGN POSITIVE
20674  106672  000000                          .WORD 0
20675  106674  060215                          .WORD 060215          ;DATA DESCRIPTOR TYPE 3 - PACKED STRING
20676                                                                ;  ALL DIGITS IDENTICAL=8; SIGN NEGATIVE
20677  106676  000000                          .WORD 0
20678  106700  060015                          .WORD 060015          ;DATA DESCRIPTOR TYPE 3 - PACKED STRING
20679                                                                ;  ALL DIGITS IDENTICAL = 0;SIGN NEGATIVE
20680  106702  000000                          .WORD 0
20681  106704  000000                          .WORD 0
20682  106706  000000                          .WORD 0
20683  106710  000000                          .WORD 0
20684  106712  000000                          .WORD 0
20685  106714  000000                          .WORD 0
20686
20687  106716                          T35A:
20688  106716  040004                          .WORD 40004
20689  106720  060074                          .WORD 060074          ;DATA DESCRIPTOR TYPE 3 - PACKED STRING
20690                                                                ;  ALL DIGITS IDENTICAL=3; SIGN POSITIVE
20691  106722  000000                          .WORD 0
20692  106724  060215                          .WORD 060215          ;DATA DESCRIPTOR TYPE 3 - PACKED STRING
20693                                                                ;  ALL DIGITS IDENTICAL=8; SIGN NEGATIVE
20694  106726  000000                          .WORD 0
20695  106730  060015                          .WORD 060015          ;DATA DESCRIPTOR TYPE 3 - PACKED STRING
20696                                                                ;  ALL DIGITS IDENTICAL = 0;SIGN NEGATIVE
20697  106732  000000                          .WORD 0
20698  106734  100037                          .WORD 100037          ;DATA DESCRIPTOR TYPE 4 - PACKED STRING
20699  106736  003370                          .WORD SSTG12          ;  PRE SPECIFIED STRING; SIGN POSITIVE
20700  106740  000000                          .WORD 0
20701  106742  000000                          .WORD 0
20702  106744  000000                          .WORD 0
20703  106746  000000                          .WORD 0
20704  106750  000000                          .WORD 0
20705  106752  000000                          .WORD 0
20706
20707  106754  040001                  TP19:   .WORD 40001
20708  106756  100037                          .WORD 100037
20709  106760  003370                          .WORD SSTG12
20710  106762  000000                          .WORD 0
20711
20712  106764  040002                  TP19A:  .WORD 40002
20713  106766  100013                          .WORD 100013          ;DATA DESC TYPE 4; PACKED STRING
20714  106770  003610                          .WORD SSTG14          ;PRESPECIFIED DATA; SIGN +
20715  106772  000000                          .WORD 0
20716  106774  100013                          .WORD 100013
20717  106776  003616                          .WORD SSTG15
```

```
20718  107000  000000                          .WORD 0
20719
20720  107002  040001                  TP19B:  .WORD 40001
20721  107004  100017                          .WORD 100017
20722  107006  003624                          .WORD SSTG16
20723  107010  000000                          .WORD 0
20724
20725  107012  040002                  TP19C:  .WORD 40002             ;PACKED STRING
20726  107014  060014                          .WORD 060014            ; ALL DIGITS IDENTICAL = 0; SIGN +
20727  107016  000000                          .WORD 0
20728  107020  060114                          .WORD 060114            ; ALL DIGITS IDENTICAL = 4; SIGN +
20729  107022  000000                          .WORD 0
20730
20731  107024  040001                  TP19D:  .WORD 40001             ;PACKED STRING
20732  107026  060014                          .WORD 060014            ;  ALL DIGITS IDENTICAL = 0; SIGN +
20733  107030  000000                          .WORD 0
20734
20735  107032  040001                  TP19E:  .WORD 40001             ;PACKED STRING
20736  107034  060174                          .WORD 060174            ; ALL DIGITS IDENTICAL = 7; SIGN +
20737  107036  000000                          .WORD 0
20738
20739  107040  040001                  TP99:   .WORD 40001             ;DATA DESC TYPE 3; PACKED STRING
20740  107042  060235                          .WORD 060235            ;ALL DIGITS IDENTICAL = 9; SIGN -
20741  107044  000000                          .WORD 0
20742
20743  107046                          T35B:
20744  107046  040005                          .WORD 40005
20745  107050  060215                          .WORD 060215            ;DATA DESCRIPTOR TYPE 3 - PACKED STRING
20746                                                                  ;  ALL DIGITS IDENTICAL=8; SIGN NEGATIVE
20747  107052  000000                          .WORD 0
20748  107054  060015                          .WORD 060015            ;DATA DESCRIPTOR TYPE 3 - PACKED STRING
20749                                                                  ;  ALL DIGITS IDENTICAL = 0;SIGN NEGATIVE
20750  107056  000000                          .WORD 0
20751  107060  100037                          .WORD 100037            ;DATA DESCRIPTOR TYPE 4 - PACKED STRING
20752  107062  003370                          .WORD SSTG12            ;  PRE SPECIFIED STRING; SIGN POSITIVE
20753  107064  000000                          .WORD 0
20754  107066  100037                          .WORD 100037            ;DATA DESCRIPTOR TYPE 4 - PACKED STRING
20755  107070  003410                          .WORD STG12B            ;  PRE SPECIFIED STRING;SIGN NEG
20756  107072  000000                          .WORD 0
20757  107074  100037                          .WORD 100037
20758  107076  003430                          .WORD STG12C
20759  107100  000000                          .WORD 0
20760  107102  000000                          .WORD 0
20761  107104  000000                          .WORD 0
20762  107106  000000                          .WORD 0
20763  107110  000000                          .WORD 0
20764  107112  000000                          .WORD 0
20765  107114  000000                          .WORD 0
20766
20767  107116                          T36A:
20768  107116  040001                          .WORD 40001
20769  107120  113701  003634                  MOVB TR0,R1             ;ENTRY 1; NO OVERLAP
20770  107124  063701  003636                  ADD TR1,R1              ;  NOTE SRC IS ZONED THEREFORE #BYTES=#DIGITS
20771  107130  067701  072460                  ADD @PTP13,R1           ;TR3 = TR0+TR1+SEP CONSTANT
```

```
20772  107134  010137  003642                  MOV R1,TR3
20773  107140  000207                          RTS PC
20774  107142  000000                          0
20775  107144                          T36:
20776  107144  040002                          .WORD 40002
20777  107146  113701  003634                  MOVB TR0,R1             ;ENTRY 1; NO OVERLAP
20778  107152  063701  003636                  ADD TR1,R1              ;  NOTE SRC IS ZONED THEREFORE #BYTES=#DIGITS
20779  107156  067701  072432                  ADD @PTP13,R1           ;TR3 = TR0+TR1+SEP CONSTANT
20780  107162  010137  003642                  MOV R1,TR3
20781  107166  000207                          RTS PC
20782  107170  000000                          0
20783  107172  113701  003634                  MOVB TR0,R1
20784  107176  063701  003636                  ADD TR1,R1              ;ENTRY 2; ADJACENT
20785  107202  010137  003642                  MOV R1,TR3              ;  TR3 = TR0 + TR1
20786  107206  123727  003635  000100         CMPB TR0+1,#100         ;IF DATA TYPE = TRAILING SEPARATE
20787  107214  001002                          BNE 1$                  ;  THEN TR3 = TR0 + TR1 + 1
20788  107216  005237  003642                  INC TR3
20789  107222  000207                  1$:     RTS PC
20790  107224  000000                          0
20791
20792  107226                          T37:
20793  107226  040003                          .WORD 40003
20794  107230  073463                          .WORD 073463            ;DATA DESCRIPTOR TYPE 3 - ZONED STRING
20795                                                                  ;  ALL DIGITS IDENTICAL =3; SIGN POSITIVE
20796                                                                  ;  HIGH NIBBLE = 7.
20797  107232  000000                          .WORD 0
20798  107234  074207                          .WORD 074207            ;DATA DESCRIPTOR TYPE 3 - ZONED STRING
20799                                                                  ;  ALL DIGITS IDENTICAL =8; SIGN NEGATIVE
20800                                                                  ;  HIGH NIBBLE = 8.
20801  107236  000000                          .WORD 0
20802  107240  070407                          .WORD 070407            ;DATA DESCRIPTOR TYPE 3 - ZONED STRING
20803                                                                  ;  ALL DIGITS IDENTICAL = 0; SIGN NEGATIVE
20804                                                                  ;  HIGH NIBBLE = 1.
20805  107242  000000                          .WORD 0
20806  107244  000000                          .WORD 0
20807  107246  000000                          .WORD 0
20808  107250  000000                          .WORD 0
20809  107252  000000                          .WORD 0
20810  107254  000000                          .WORD 0
20811
20812  107256                          T37A:
20813  107256  040004                          .WORD 40004
20814  107260  073463                          .WORD 073463            ;DATA DESCRIPTOR TYPE 3 - ZONED STRING
20815                                                                  ;  ALL DIGITS IDENTICAL =3; SIGN POSITIVE
20816                                                                  ;  HIGH NIBBLE = 7.
20817  107262  000000                          .WORD 0
20818  107264  074207                          .WORD 074207            ;DATA DESCRIPTOR TYPE 3 - ZONED STRING
20819                                                                  ;  ALL DIGITS IDENTICAL =8; SIGN NEGATIVE
20820                                                                  ;  HIGH NIBBLE = 8.
20821  107266  000000                          .WORD 0
20822  107270  070407                          .WORD 070407            ;DATA DESCRIPTOR TYPE 3 - ZONED STRING
20823                                                                  ;  ALL DIGITS IDENTICAL = 0; SIGN NEGATIVE
20824                                                                  ;  HIGH NIBBLE = 1.
20825  107272  000000                          .WORD 0
```

```
20826  107274  110037                          .WORD 110037          ;DATA DESCRIPTOR TYPE 4 - ZONED STRING
20827  107276  003450                          .WORD SSTG13          ;PRE SPECIFIED STRING; SIGN POSTIVE
20828  107300  000000                          .WORD 0
20829  107302  000000                          .WORD 0
20830  107304  000000                          .WORD 0
20831  107306  000000                          .WORD 0
20832  107310  000000                          .WORD 0
20833  107312  000000                          .WORD 0
20834
20835  107314                          TZ19:
20836  107314  040001                          .WORD 40001
20837  107316  110037                          .WORD 110037
20838  107320  003450                          .WORD SSTG13
20839  107322  000000                          .WORD 0
20840  107324                          T37B:
20841  107324  040005                          .WORD 40005
20842  107326  074207                          .WORD 074207          ;DATA DESCRIPTOR TYPE 3 - ZONED STRING
20843                                                                ;  ALL DIGITS IDENTICAL =8; SIGN NEGATIVE
20844                                                                ;  HIGH NIBBLE = 8.
20845  107330  000000                          .WORD 0
20846  107332  070407                          .WORD 070407          ;DATA DESCRIPTOR TYPE 3 - ZONED STRING
20847                                                                ;  ALL DIGITS IDENTICAL = 0; SIGN NEGATIVE
20848                                                                ;  HIGH NIBBLE = 1.
20849  107334  000000                          .WORD 0
20850  107336  110037                          .WORD 110037          ;DATA DESCRIPTOR TYPE 4 - ZONED STRING
20851  107340  003450                          .WORD SSTG13          ;PRE SPECIFIED STRING; SIGN POSTIVE
```

```
 20853  107342  000000                          .WORD 0
```

```
20855  107344  110037                          .WORD 110037
20856  107346  003510                          .WORD STG13B
20857  107350  000000                          .WORD 0
20858  107352  110037                          .WORD 110037
20859  107354  003550                          .WORD STG13C
20860  107356  000000                          .WORD 0
20861  107360  000000                          .WORD 0
20862  107362  000000                          .WORD 0
20863  107364  000000                          .WORD 0
20864  107366  000000                          .WORD 0
20865  107370  000000                          .WORD 0
20866
20867  107372                          T40:
```

```
20869  107372  000405                          .WORD 405           ;LONG INTEGER - HIGH WORD
20870  107374  000000                          .WORD 0             ; 0+
20871  107376  100000                          .WORD 100000        ; 0-
20872  107400  077777                          .WORD 077777        ; 77777+
20873  107402  177777                          .WORD 177777        ; 77777-
20874  107404  000005                          .WORD 05            ; 5+
20875  107406  000000                          .WORD 0
20876  107410  000000                          .WORD 0
20877  107412  000000                          .WORD 0
20878  107414  000000                          .WORD 0
20879  107416  000000                          .WORD 0
20880
20881  107420                          T40A:
20882  107420  000401                          .WORD 401
20883  107422  000000                          .WORD 0
20884
20885  107424  000403                  T40B:   .WORD 403
20886  107426  000000                          .WORD 0
20887  107430  000231                          .WORD 231
20888  107432  000252                          .WORD 252
20889  107434  000000                          .WORD 0
20890  107436                          T41A:
20891  107436  000401                          .WORD 401
20892  107440  177777                          .WORD 177777
20893  107442                          T40AA:
20894  107442  000401                          .WORD 401
20895  107444  000005                          .WORD 5
20896  107446                          T41AA:
20897  107446  000401                          .WORD 401
20898  107450  000004                          .WORD 4
20899  107452                          T41:
20900  107452  000403                          .WORD 403           ;LONG INTEGER - LOW WORD
20901  107454  000000                          .WORD 0
20902  107456  000004                          .WORD 4
20903  107460  177777                          .WORD 177777
20904  107462  000000                          .WORD 0
20905  107464  000000                          .WORD 0
20906  107466  000000                          .WORD 0
20907  107470  000000                          .WORD 0
20908
20909  107472  000403                  T41B:   .WORD 403
20910  107474  120360                          .WORD 120360
20911  107476  000000                          .WORD 0
20912  107500  000125                          .WORD 125
20913  107502  000000                          .WORD 0
20914
20915  107504                          T42:
20916  107504  040001                          .WORD 40001
20917  107506  077623                          .WORD 077623        ;DATA DESCRIPTOR TYPE 3 - ZONED STRING
20918                                                              ;  ALL DIGITS IDENTICAL = 9;SIGN +
20919                                                              ;  HIGH NIBBLE = 17
20920  107510  000000                          .WORD 0
20921  107512  000000                          .WORD 0
20922  107514  000000                          .WORD 0
```

```
20923  107516  000000                          .WORD 0
20924  107520  000000                          .WORD 0
20925
20926  107522                          T43:
```

```
20928  107522  000401                          .WORD 401
20929  107524  000011                          .WORD 11
20930  107526  000000                          .WORD 0
20931  107530  000000                          .WORD 0
20932  107532  000000                          .WORD 0
20933  107534  000000                          .WORD 0
20934
20935  107536                          T43A:
20936  107536  000401                          .WORD 401
20937  107540  000101                          .WORD 101
20938  107542  000000                          .WORD 0
20939  107544  000000                          .WORD 0
20940  107546  000000                          .WORD 0
20941  107550  000000                          .WORD 0
20942
20943  107552                          T44A:
20944  107552  040001                          .WORD 40001
20945  107554  113701  003634                  MOVB TR0,R1             ;ENTRY 1; NO OVERLAP
20946  107560  006201                          ASR R1                  ;     TR3=TR1+[(TR0/2)+1] + SEP CONST
20947  107562  005201                          INC R1
20948  107564  063701  003636                  ADD TR1,R1
20949  107570  067701  072022                  ADD @PTP14,R1
20950  107574  010137  003642                  MOV R1,TR3
20951  107600  000207                          RTS PC
20952  107602  000000                          0
20953  107604                          T44:
20954  107604  040002                          .WORD 40002
20955  107606  113701  003634                  MOVB TR0,R1             ;ENTRY 1; NO OVERLAP
20956  107612  006201                          ASR R1                  ;     TR3=TR1+[(TR0/2)+1] + SEP CONST
20957  107614  005201                          INC R1
20958  107616  063701  003636                  ADD TR1,R1
20959  107622  067701  071770                  ADD @PTP14,R1
20960  107626  010137  003642                  MOV R1,TR3
20961  107632  000207                          RTS PC
20962  107634  000000                          0
20963  107636  105737  003634                  TSTB TR0                        ;IF EITHER SRC1=0 OR SRC2=0 BUT NOT BOTH
20964  107642  001004                          BNE 1$                  ;  THEN SKIP THIS TEST CONDITION.
20965  107644  105737  003640                  TSTB TR2                        ;SCR1=0
20966  107650  001404                          BEQ 2$                  ;BRANCH IF SRC2 ALSO = 0.
20967  107652  000417                          BR 3$                   ;SKIP TEST
20968  107654  105737  003640          1$:     TSTB TR2                        ;SRC1 NOT = 0
20969  107660  001414                          BEQ 3$                  ;SKIP TEST IF SRC2 = 0
20970  107662  113701  003634          2$:     MOVB TR0,R1             ;ENTRY 2; ALIGNED SRC1-SRC2 LEAST SIGN DIGIT
20971  107666  006201                          ASR R1                  ;     TR3=TR1+(TR0/2)-(TR2/2)
20972  107670  113702  003640                  MOVB TR2,R2
20973  107674  006202                          ASR R2
20974  107676  160201                          SUB R2,R1
20975  107700  063701  003636                  ADD TR1,R1
20976  107704  010137  003642                  MOV R1,TR3
20977  107710  000207                          RTS PC
20978  107712  062706  000002          3$:     ADD #2,SP               ;FIXUP STACK POINTER
20979  107716  000137  042764                  JMP NXTC                ;SKIP TEST CONDITION - INVALID
20980  107722  000000                          0
20981
```

```
20982  107724                          T45:
20983  107724  040004                          .WORD 40004
20984  107726  100037                          .WORD 100037          ;DATA DESC. TYPE 4 - PACKED STRING
20985  107730  003370                          .WORD SSTG12          ;  ALL DIGITS IDENTICAL = 3 SIGN +
20986  107732  000000                          .WORD 0
20987  107734  060075                          .WORD 060075          ;DATA DESC. TYPE 3 - PACKED STRING
20988                                                                ;   ALL DIGITS IDENTICAL = 3, SIGN -
20989  107736  000000                          .WORD 0
20990  107740  060014                          .WORD 060014          ;DATA DESC TYPE 3 - PACKED STRING
20991                                                                ;  ALL DIGITS IDENTICAL=0, SIGN POS
20992  107742  000000                          .WORD 0
20993  107744  060015                          .WORD 060015          ;DATA DESC TYPE 3 - PACKED STG
20994                                                                ;  ALL DIGITS IDENTICAL = 0, SIGN -
20995  107746  000000                          .WORD 0
20996  107750  000000                          .WORD 0
20997  107752  000000                          .WORD 0
20998  107754  000000                          .WORD 0
20999  107756  000000                          .WORD 0
21000
21001  107760                          T46A:
21002  107760  040001                          .WORD 40001           ;FOR CMPN ONLY
21003  107762  113701  003634                  MOVB TR0,R1           ;ENTRY 1; NO OVERLAP
```

```
 21005  107766  063701  003636                  ADD TR1,R1              ;     TR3=TR1+TR0+SEP CONST
```

```
 21007  107772  067701  071620                  ADD @PTP14,R1
 21008  107776  010137  003642                  MOV R1,TR3
```

```
21010  110002  000207                          RTS PC
21011  110004  000000                          0
21012  110006                          T46:
21013  110006  040004                          .WORD 40004             ;FOR CMPN ONLY
21014  110010  113701  003634                  MOVB TR0,R1             ;ENTRY 1; NO OVERLAP
21015  110014  063701  003636                  ADD TR1,R1              ;     TR3=TR1+TR0+SEP CONST
21016  110020  067701  071572                  ADD @PTP14,R1
21017  110024  010137  003642                  MOV R1,TR3
21018  110030  000207                          RTS PC
21019  110032  000000                          0
21020  110034  023727  002446  000001          CMP S1TYPE,#1           ;SKIP TEST IS EITHER SRC DATA TYPE IS NOT 0 OR 1.
21021  110042  101066                          BHI 2$
21022  110044  023727  002450  000001          CMP S2TYPE,#1
21023  110052  101062                          BHI 2$
21024  110054  105737  003634                  TSTB TR0                        ;ENTRY 2; ADJACENT
21025  110060  001453                          BEQ 1$                  ;    TR3=TR1+TR0
21026  110062  113701  003634                  MOVB TR0,R1             ;     REDUNDANT WITH ENTRY 4 IF TR0=0
21027  110066  063701  003636                  ADD TR1,R1
21028  110072  010137  003642                  MOV R1,TR3
21029  110076  000207                          RTS PC
21030  110100  000000                          0
21031  110102  023727  002446  000001          CMP S1TYPE,#1           ;SKIP TEST IS EITHER SRC DATA TYPE IS NOT 0 OR 1.
21032  110110  101043                          BHI 2$
21033  110112  023727  002450  000001          CMP S2TYPE,#1
21034  110120  101037                          BHI 2$
21035  110122  113701  003634                  MOVB TR0,R1             ;ENTRY 3; PARTIAL OVERLAP
21036  110126  113702  003640                  MOVB TR2,R2             ;      TR3=TR1+TR0-(TR2/2)
21037  110132  006202                          ASR R2                  ;       REDUNDANT WITH ENTRY 4 IF
21038  110134  160201                          SUB R2,R1               ;       TR0-(TR2/2)=0
21039  110136  005701                          TST R1
21040  110140  001423                          BEQ 1$
21041  110142  063701  003636                  ADD TR1,R1
21042  110146  010137  003642                  MOV R1,TR3
21043  110152  000207                          RTS PC
21044  110154  000000                          0
21045  110156  023727  002446  000001          CMP S1TYPE,#1           ;SKIP TEST IS EITHER SRC DATA TYPE IS NOT 0 OR 1.
21046  110164  101015                          BHI 2$
21047  110166  023727  002450  000001          CMP S2TYPE,#1
21048  110174  101011                          BHI 2$
21049  110176  013737  003636  003642          MOV TR1,TR3             ;ENTRY 4;  COMPLETE OVERLAP
21050  110204  000207                          RTS PC                  ;       TR3=TR1
21051  110206  000000                          0
21052  110210  062706  000002          1$:     ADD #2,SP               ;FIXUP STACK POINTER
21053  110214  000137  042500                  JMP REDNTC              ;SKIP ENTRY TEST CONDITION - REDUNDANT
21054  110220  062706  000002          2$:     ADD #2,SP
21055  110224  000137  042764                  JMP NXTC                ;SKIP TEST CONDITION - ILLEGAL
21056
21057  110230                          T47:
21058  110230  040004                          .WORD 40004
21059  110232  070607                          .WORD 070607            ;DATA DESC TYPE 3 - ZONED STRING
21060                                                                  ;  ALL DIGITS IDENTICAL = 8, SIGN -
21061                                                                  ;  HIGH NIBBLE = 1
21062  110234  000000                          .WORD 0
21063  110236  077603                          .WORD 077603            ;DATA DESC TYPE 3 - ZONED STRING
```

```
21064
21065                                                   ;  ALL DIGITS IDENTICAL = 8, SIGN +
21066  110240  000000                    .WORD 0        ;  HIGH NIBBLE = 17
21067  110242  070403                    .WORD 070403   ;DATA DESC TYPE 3 - ZONED STG
21068                                                   ;  ALL DIGITS IDENTICAL = 0, SIGN +
21069                                                   ;  HIGH NIBBLE = 1
21070  110244  000000                    .WORD 0
21071  110246  074007                    .WORD 074007   ;DATA DESC TYPE 3 - ZONED STRING
21072                                                   ;  ALL DIGITS IDENTICAL = 0, SIGN -
21073                                                   ;  HIGH NIBBLE = 8
21074  110250  000000                    .WORD 0
21075  110252  000000                    .WORD 0
21076  110254  000000                    .WORD 0
21077  110256  000000                    .WORD 0
21078  110260  000000                    .WORD 0
21079  110262  000000                    .WORD 0
21080
21081  110264                    T50:
21082  110264  000406                    .WORD 406
21083  110266  000000                    .WORD 0        ;RND.DGT=0, SHFT.CNT=0
21084  110270  002776                    .WORD 002776   ;RND.DGT=5, SHFT.CNT=-2
21085  110272  004402                    .WORD 004402   ;RND.DGT=9, SHFT.CNT=+2
21086  110274  001775                    .WORD 001775   ;RND.DGT=3, SHFT.CNT=-3
21087  110276  000775                    .WORD 000775   ;RND.DGT=1, SHFT.CNT=-3
21088  110300  000005                    .WORD 000005   ;RND.DGT=0, SHFT.CNT=5
21089  110302  000000                    .WORD 0
21090  110304  000000                    .WORD 0
21091  110306  000000                    .WORD 0
21092  110310  000000                    .WORD 0
21093  110312  000000                    .WORD 0
21094
21095  110314                    T50A:
21096  110314  000401                    .WORD 401
21097  110316  002777                    .WORD 002777
21098
21099  110320  000402            T50B:   .WORD 402
21100  110322  003777                    .WORD 003777   ;RND.DGT = 7,SHFT.CT=-1
21101  110324  003402                    .WORD 003402   ;RND.DGT = 7,SHFT.CT=2
21102  110326  000000                    .WORD 0
21103
21104  110330  000404            T50C:   .WORD 404
21105  110332  003777                    .WORD 3777     ;RND.DGT = 7,SHFT.CT=-1
21106  110334  003776                    .WORD 3776     ;RND.DGT = 7,SHFT.CT=-2
21107  110336  000400                    .WORD 0400     ;RND.DGT = 1,SHFT.CT=0
21108  110340  004003                    .WORD 4003     ;RND.DGT = 8,SHFT.CT=3
21109  110342  000000                    .WORD 0
21110
21111  110344  000402            T50D:   .WORD 402
21112  110346  001376                    .WORD 1376     ;RND.DGT = 2,SHFT.CT=-2
21113  110350  004775                    .WORD 4775     ;RND.DGT = 9,SHFT.CT=-3
21114  110352  000000                    .WORD 0
21115
21116  110354                    T51:
21117  110354  001004                    .WORD 1004     ;PACKED STRINGS
```

```
21118  110356  100012                          .WORD 100012            ;DATA DESC TYPE 4 - PRE SPECIFIED STRING
21119                                                                  ;   OF TEN DIGITS
21120  110360  003254                          .WORD SSTG2             ;+2,147,483,648
21121  110362  100012                          .WORD 100012
21122  110364  003310                          .WORD SSTG4             ;+2,147,483,647
21123  110366  100012                          .WORD 100012
21124  110370  003330                          .WORD SSTG6             ;-2,147,483,648
21125  110372  100012                          .WORD 100012
21126  110374  003350                          .WORD SSTG10            ;-2,147,483,649
21127  110376  100012                          .WORD 100012
21128  110400  003262                          .WORD SSTG2A            ;+4,294,967,294
21129  110402  100012                          .WORD 100012
21130  110404  003270                          .WORD SSTG2B            ;+42,949,672,940
21131  110406  000000                          .WORD 0
21132  110410  000000                          .WORD 0
21133  110412  000000                          .WORD 0
21134  110414  000000                          .WORD 0
21135
21136  110416                          T52:
21137  110416  001004                          .WORD 1004              ;ZONED STRINGS
21138  110420  110012                          .WORD 110012            ;DATA DESC TYPE 4 - PRE SPECIFIED STRING
21139                                                                  ;  OF 10 DIGITS
21140  110422  003276                          .WORD SSTG3             ;+2,147,483,648
21141  110424  110012                          .WORD 110012
21142  110426  003316                          .WORD SSTG5             ;+2,147,483,647
21143  110430  110012                          .WORD 110012
21144  110432  003336                          .WORD SSTG7             ;-2,147,483,648
21145  110434  110012                          .WORD 110012
21146  110436  003356                          .WORD SSTG11            ;-2,147,483,649
21147  110440  000000                          .WORD 0
21148  110442  000000                          .WORD 0
21149  110444  000000                          .WORD 0
21150  110446  000000                          .WORD 0
21151
21153  110450  000401                  T53:    .WORD 401
21154  110452  177777                          .WORD 177777
21155  110454  000000                          .WORD 0
21156  110456  000000                          .WORD 0
21157
21158  110460  000401                  T54:    .WORD 401
21159  110462  111111                          .WORD 111111
21160  110464  000000                          .WORD 0
21161  110466  000000                          .WORD 0
21162
21163
21164  110470  000401                  T55:    .WORD 401
21165  110472  122222                          .WORD 122222
21166  110474  000000                          .WORD 0
21167  110476  000000                          .WORD 0
21168
21169  110500  000401                  T56:    .WORD 401
21170  110502  133333                          .WORD 133333
21171  110504  000000                          .WORD 0
21172  110506  000000                          .WORD 0
```

```
 21173
 21174  110510  000401                    T57:    .WORD 401
 21175  110512  144444                            .WORD 144444
```

```
21177  110514  000000                          .WORD 0
21178  110516  000000                          .WORD 0
21179
21180  110520  000401                  T60:    .WORD 401
21181  110522  155555                          .WORD 155555
21182  110524  000000                          .WORD 0
21183  110526  000000                          .WORD 0
21184
21185  110530                          T61:                        ;LOAD DESC - DESC ADDRESS TABLE
21186  110530  040010                          .WORD 40010         ;VARIABLE LENGTH ENTRIES; 8 ENTRIES
21187  110532  042737  000007  050164          BIC #7,TINST        ;ENTRY 1;RN=R0;OPCODE = 0760X0
21188  110540  013737  001640  003634          MOV TBADR,TR0       ;       LOAD PTR ADDRESS INTO R0
21189  110546  013702  001640          1$:     MOV TBADR,R2        ;       LOAD 1ST PTR WITH 1ST DESC ADDR.
21190  110552  010201                          MOV R2,R1
21191  110554  063701  001642                  ADD TBLEN,R1        ;       1ST DESC ADDR=TBADR+TBLEN-10
21192  110560  162701  000010                  SUB #10,R1
21193  110564  010112                          MOV R1,(R2)
21194  110566  162701  000010                  SUB #10,R1          ;       LOAD 2ND PTR WITH 2ND DESC ADDR.
21195  110572  010162  000002                  MOV R1,2(R2)        ;       2ND DESC ADDR=TBADR+TBLEN-20
21196  110576  162701  000010                  SUB #10,R1          ;       LOAD 3RD PTR WITH 3RD DESC ADDR.
21197  110602  010162  000004                  MOV R1,4(R2)        ;       3RD DESC ADDR=TBADR+TBLEN-30
21198  110606  013737  050164  046310          MOV TINST,EINSTR
21199  110614  000207                          RTS PC
21200  110616  000000                          0
21201
21202  110620  052737  000001  050164          BIS #1,TINST        ;ENTRY 2;RN=R1;OPCODE=0760X1
21203  110626  013737  001640  003636          MOV TBADR,TR1
21204  110634  000744                          BR 1$
21205  110636  000000                          0
21206
21207  110640  042737  000007  050164          BIC #7,TINST
21208  110646  052737  000002  050164          BIS #2,TINST        ;ENTRY 3;RN=R2;OPCODE=0760X2
21209  110654  013737  001640  003640          MOV TBADR,TR2
21210  110662  000731                          BR 1$
21211  110664  000000                          0
21212
21213  110666  052737  000003  050164          BIS #3,TINST        ;ENTRY 4;RN=R3;OPCODE=0760X3
21214  110674  013737  001640  003642          MOV TBADR,TR3
21215  110702  000721                          BR 1$
21216  110704  000000                          0
21217
21218  110706  042737  000007  050164          BIC #7,TINST
21219  110714  052737  000004  050164          BIS #4,TINST        ;ENTRY 5;RN=R4;OPCODE=0760X4
21220  110722  013737  001640  003644          MOV TBADR,TR4
21221  110730  000706                          BR 1$
21222  110732  000000                          0
21223
21224  110734  052737  000005  050164          BIS #5,TINST        ;ENTRY 6;RN=R5;OPCODE=0760X5
21225  110742  013737  001640  003646          MOV TBADR,TR5
21226  110750  000676                          BR 1$
21227  110752  000000                          0
21228
21229  110754  042737  000007  050164          BIC #7,TINST
21230  110762  052737  000006  050164          BIS #6,TINST        ;ENTRY 7:RN=R6;OPCODE=0760X6
```

```
21231  110770  013737  001640  003650          MOV TBADR,TR6
21232  110776  000663                          BR 1$
21233  111000  000000                          0
21234
21235  111002  052737  000007  050164          BIS #7,TINST            ;ENTRY 8;RN=R7;OPCODE=0760X7
21236  111010  013702  001640                  MOV TBADR,R2
21237  111014  063702  001642                  ADD TBLEN,R2
21238  111020  162702  000010                  SUB #10,R2
21239  111024  010237  050166                  MOV R2,TINST+2
21240  111030  162702  000010                  SUB #10,R2
21241  111034  010237  050170                  MOV R2,TINST+4
21242  111040  023727  050164  076067          CMP TINST,#076067
21243  111046  001021                          BNE 2$
21244  111050  162702  000010                  SUB #10,R2
21245  111054  010237  050172                  MOV R2,TINST+6
21246  111060  013737  001700  050174          MOV KBR2,TINST+10
21247  111066  013737  001672  050176  3$:     MOV KHALT,TINST+12
21248  111074  013737  001672  050200          MOV KHALT,TINST+14
21249  111102  013737  050164  046310          MOV TINST,EINSTR
21250  111110  000207                          RTS PC
21251  111112  013737  001676  050172  2$:     MOV KBR3,TINST+6
21252  111120  013737  001672  050174          MOV KHALT,TINST+10
21253  111126  000757                          BR 3$
21254  111130  000000                          0
21255
21256
21257  111132                                  STARS
21262                                          .SBTTL  READ A DECIMAL NUMBER FROM THE TTY
  (1)
  (2)                                          ;;*****************************************************************
  (1)                                          ;*THIS ROUTINE WILL READ A DECIMAL (ASCII) NUMBER FROM THE TTY AND
  (1)                                          ;*CHANGE IT TO BINARY. IF TOO MANY CHARACTERS OR ANY ILLEGAL CHARACTERS
  (1)                                          ;*ARE READ A "?" FOLLOWED BY A CARRIAGE RETURN-LINE FEED WILL BE TYPED.
  (1)                                          ;*THE COMPLETE NUMBER MUST BE RETYPED. THE INPUT IS TERMINATED BY THE
  (1)                                          ;*USER TYPING A CARRIAGE RETURN. THE RANGE OF THE INPUT NUMBER IS
  (1)                                          ;*POSITIVE 32767 TO NEGATIVE 32768.
  (1)                                          ;*CALL:
  (1)                                          ;*      RDDEC                   ;;READ A DECIMAL NUMBER
  (1)                                          ;*      RETURN HERE             ;;NUMBER IS ON TOP OF THE STACK
  (1)                                          ;
  (1)
  (1)  111132  011646                  $RDDEC: MOV     (SP),-(SP)      ;;PROVIDE SPACE FOR
  (1)  111134  016666  000004  000002          MOV     4(SP),2(SP)     ;;THE INPUT NUMBER
  (3)  111142  010046                          MOV     R0,-(SP)        ;;PUSH R0 ON STACK
  (3)  111144  010146                          MOV     R1,-(SP)        ;;PUSH R1 ON STACK
  (3)  111146  010246                          MOV     R2,-(SP)        ;;PUSH R2 ON STACK
  (1)  111150  104403                  1$:     RDLIN                   ;;READ AN ASCIZ LINE
  (1)  111152  012600                          MOV     (SP)+,R0        ;;ADDRESS OF 1ST CHAR.
  (1)  111154  010037  111300                  MOV     R0,6$           ;;SAVE INCASE OF BAD INPUT
  (1)  111160  005046                          CLR     -(SP)           ;;CLEAR DATA WORD
  (1)  111162  005002                          CLR     R2              ;;SIGN SET POSITIVE
  (1)  111164  122710  000055                  CMPB    #'-,(R0)        ;;SEE IF A MINUS SIGN WAS TYPED
  (1)  111170  001001                          BNE     2$              ;;BR IF NO MINUS SIGN
  (1)  111172  112002                          MOVB    (R0)+,R2        ;;SAVE FOR LATER USE
```

```
(1)  111174  112001                2$:   MOVB   (R0)+,R1        ;;PICKUP THIS CHARACTER
(1)  111176  001424                      BEQ    3$              ;;GET OUT IF ZERO
(1)  111200  122701  000060              CMPB   #'0,R1          ;;MAKE SURE THIS CHARACTER
(1)  111204  003032                      BGT    5$              ;;IS A DIGIT BETWEEN 0 & 9
(1)  111206  122701  000071              CMPB   #'9,R1
(1)  111212  002427                      BLT    5$
(1)  111214  032716  170000              BIT    #^C7777,(SP)    ;;DON'T LET NUMBER GET TO BIG
(1)  111220  001024                      BNE    5$              ;;BR IF NUMBER WOULD OVERFLOW
(1)  111222  006316                      ASL    (SP)            ;;*2
(1)  111224  011646                      MOV    (SP),-(SP)      ;;SAVE FOR LATER
(1)  111226  006316                      ASL    (SP)            ;;*4
(1)  111230  006316                      ASL    (SP)            ;;*8.
(1)  111232  062616                      ADD    (SP)+,(SP)      ;;*10.
(1)  111234  102416                      BVS    5$              ;;OVERFLOW ISN'T ALLOWED
(1)  111236  162701  000060              SUB    #'0,R1          ;;STRIP AWAY THE ASCII JUNK
(1)  111242  060116                      ADD    R1,(SP)         ;;ADD IN THIS DIGIT
(1)  111244  102412                      BVS    5$              ;;OVERFLOW ISN'T ALLOWED
(1)  111246  000752                      BR     2$              ;;LOOP
(1)  111250  005702                3$:   TST    R2              ;;CHECK IF NUMBER IS NEG
(1)  111252  001401                      BEQ    4$              ;;BR IF NO
(1)  111254  005416                      NEG    (SP)            ;;YES--NEGATE THE NUMBER
(1)  111256  012666  000012        4$:   MOV    (SP)+,12(SP)    ;;SAVE THE RESULT
(3)  111262  012602                      MOV    (SP)+,R2        ;;POP STACK INTO R2
(3)  111264  012601                      MOV    (SP)+,R1        ;;POP STACK INTO R1
(3)  111266  012600                      MOV    (SP)+,R0        ;;POP STACK INTO R0
(1)  111270  000002                      RTI                    ;;RETURN
(1)
(1)  111272  005726                5$:   TST    (SP)+           ;;CLEAN PARTIAL NUMBER FROM STACK
(1)  111274  105010                      CLRB   (R0)            ;;SET A TERMINATOR
(1)  111276  104401                      TYPE                   ;;TYPE THE INPUT UP TO BAD CHAR.
(1)  111300  000000                6$:   .WORD  0               ;;POINTER GOES HERE
(1)  111302  104401  111310              TYPE   ,$QUES          ;;'?' 'CR' &'LF'
(1)  111306  000720                      BR     1$              ;;TRY AGAIN
(1)  111310     077                $QUES: .ASCII  '?'                 ;;QUESTION MARK
(1)  111311     015                $CRLF: .ASCII  <15>                ;;CARRAIGE RETURN
(1)  111312  000012                $LF:   .ASCIZ  <12>                ;;LINEFEED
21263
(1)                                .SBTTL TTY INPUT ROUTINE
(2)
(1)                                ;;**********************************************************************
(1)  111314  177560                $TKS:  .WORD  177560           ;;TTY KBD STATUS
(1)  111316  177562                $TKB:  .WORD  177562           ;;TTY KBD BUFFER
(1)                                .ENABL LSB
(1)
(1)                                .DSABL LSB
(1)
(1)
(2)                                ;;**********************************************************************
(1)                                ;*THIS ROUTINE WILL INPUT A SINGLE CHARACTER FROM THE TTY
(1)                                ;*CALL:
(1)                                ;*      RDCHR                  ;;INPUT A SINGLE CHARACTER FROM THE TTY
(1)                                ;*      RETURN HERE            ;;CHARACTER IS ON THE STACK
(1)                                ;*                             ;;WITH PARITY BIT STRIPPED OFF
(1)                                ;
(1)
```

```
(1)  111320  011646                    $RDCHR: MOV     (SP),-(SP)      ;;PUSH DOWN THE PC
(1)  111322  016666  000004  000002            MOV     4(SP),2(SP)     ;;SAVE THE PS
(1)  111330  105777  177760            1$:     TSTB    @$TKS           ;;WAIT FOR
(1)  111334  100375                            BPL     1$              ;;A CHARACTER
(1)  111336  117766  177754  000004            MOVB    @$TKB,4(SP)     ;;READ THE TTY
(1)  111344  042766  177600  000004            BIC     #^C<177>,4(SP)  ;;GET RID OF JUNK IF ANY
(1)  111352  026627  000004  000023            CMP     4(SP),#23       ;;IS IT A CONTROL-S?
(1)  111360  001013                            BNE     3$              ;;BRANCH IF NO
(1)  111362  105777  177726            2$:     TSTB    @$TKS           ;;WAIT FOR A CHARACTER
(1)  111366  100375                            BPL     2$              ;;LOOP UNTIL ITS THERE
(1)  111370  117746  177722                    MOVB    @$TKB,-(SP)     ;;GET CHARACTER
(1)  111374  042716  177600                    BIC     #^C177,(SP)     ;;MAKE IT 7-BIT ASCII
(1)  111400  022627  000021                    CMP     (SP)+,#21       ;;IS IT A CONTROL-Q?
(1)  111404  001366                            BNE     2$              ;;IF NOT DISCARD IT
(1)  111406  000750                            BR      1$              ;;YES, RESUME
(1)  111410  026627  000004  000021    3$:     CMP     4(SP),#$XON     ;;IS IT A RANDOM XON?           ;RAN001
(1)  111416  001744                            BEQ     1$              ;;BRANCH IF YES                 ;RAN001
(1)  111420  026627  000004  000140            CMP     4(SP),#140      ;;IS IT UPPER CASE?
(1)  111426  002407                            BLT     4$              ;;BRANCH IF YES
(1)  111430  026627  000004  000175            CMP     4(SP),#175      ;;IS IT A SPECIAL CHAR?
(1)  111436  003003                            BGT     4$              ;;BRANCH IF YES
(1)  111440  042766  000040  000004            BIC     #40,4(SP)       ;;MAKE IT UPPER CASE
(1)  111446  000002                    4$:     RTI                     ;;GO BACK TO USER
(2)                                    ;;**************************************************************
(1)                                    ;*THIS ROUTINE WILL INPUT A STRING FROM THE TTY
(1)                                    ;*CALL:
(1)                                    ;*      RDLIN                   ;;INPUT A STRING FROM THE TTY
(1)                                    ;*      RETURN HERE             ;;ADDRESS OF FIRST CHARACTER WILL BE ON THE STACK
(1)                                    ;*                              ;;TERMINATOR WILL BE A BYTE OF ALL 0'S
(1)
(1)  111450  010346                    $RDLIN: MOV     R3,-(SP)        ;;SAVE R3
(1)  111452  012703  111556            1$:     MOV     #$TTYIN,R3      ;;GET ADDRESS
(1)  111456  022703  111566            2$:     CMP     #$TTYIN+8.,R3   ;;BUFFER FULL?
(1)  111462  101405                            BLOS    4$              ;;BR IF YES
(1)  111464  104402                            RDCHR                   ;;GO READ ONE CHARACTER FROM THE TTY
(1)  111466  112613                            MOVB    (SP)+,(R3)      ;;GET CHARACTER
(1)  111470  122713  000177            10$:    CMPB    #177,(R3)       ;;IS IT A RUBOUT
(1)  111474  001003                            BNE     3$              ;;SKIP IF NOT
(1)  111476  104401  111310            4$:     TYPE    ,$QUES          ;;TYPE A '?'
(1)  111502  000763                            BR      1$              ;;CLEAR THE BUFFER AND LOOP
(1)  111504  111337  111554            3$:     MOVB    (R3),9$         ;;ECHO THE CHARACTER
(1)  111510  104401  111554                    TYPE    ,9$
(1)  111514  122723  000015                    CMPB    #15,(R3)+       ;;CHECK FOR RETURN
(1)  111520  001356                            BNE     2$              ;;LOOP IF NOT RETURN
(1)  111522  105063  177777                    CLRB    -1(R3)          ;;CLEAR RETURN (THE 15)
(1)  111526  104401  111312                    TYPE    ,$LF            ;;TYPE A LINE FEED
(1)  111532  012603                            MOV     (SP)+,R3        ;;RESTORE R3
(1)  111534  011646                            MOV     (SP),-(SP)      ;;ADJUST THE STACK AND PUT ADDRESS OF THE
(1)  111536  016666  000004  000002            MOV     4(SP),2(SP)     ;;      FIRST ASCII CHARACTER ON IT
(1)  111544  012766  111556  000004            MOV     #$TTYIN,4(SP)
(1)  111552  000002                            RTI                     ;;RETURN
(1)  111554     000            9$:     .BYTE   0                       ;;STORAGE FOR ASCII CHAR. TO TYPE
(1)  111555     000                    .BYTE   0                       ;;TERMINATOR
(1)  111556  000010            $TTYIN: .BLKB   8.                      ;;RESERVE 8 BYTES FOR TTY INPUT
```

```
   (1)  111566  052536  005015     000  $CNTLU: .ASCIZ  /^U/<15><12>     ;;CONTROL 'U'
   (1)  111573     136  006507  000012  $CNTLG: .ASCIZ  /^G/<15><12>     ;;CONTROL 'G'
   (1)  111600  005015  053523  020122  $MSWR:  .ASCIZ  <15><12>/SWR = /
   (1)  111606  020075     000
   (1)  111611     040  047040  053505  $MNEW:  .ASCIZ  /  NEW = /
   (1)  111616  036440  000040
21264
   (1)                                  .SBTTL  TYPE ROUTINE
   (1)
   (2)                                  ;;*****************************************************************
   (1)                                  ;*ROUTINE TO TYPE ASCIZ MESSAGE. MESSAGE MUST TERMINATE WITH A 0 BYTE.
   (1)                                  ;*THE ROUTINE WILL INSERT A NUMBER OF NULL CHARACTERS AFTER A LINE FEED.
   (1)                                  ;*NOTE1:        $NULL CONTAINS THE CHARACTER TO BE USED AS THE FILLER CHARACTER.
   (1)                                  ;*NOTE2:        $FILLS CONTAINS THE NUMBER OF FILLER CHARACTERS REQUIRED.
   (1)                                  ;*NOTE3:        $FILLC CONTAINS THE CHARACTER TO FILL AFTER.
   (1)                                  ;*
   (1)                                  ;*CALL:
   (1)                                  ;*1) USING A TRAP INSTRUCTION
   (1)                                  ;*      TYPE    ,MESADR         ;;MESADR IS FIRST ADDRESS OF AN ASCIZ STRING
   (1)                                  ;*OR
   (1)                                  ;*      TYPE
   (1)                                  ;*      MESADR
   (1)                                  ;*
   (1)
   (1)  111622  105737  112175          $TYPE:  TSTB    $TPFLG          ;;IS THERE A TERMINAL?
   (1)  111626  100002                          BPL     1$              ;;BR IF YES
   (1)  111630  000000                          HALT                    ;;HALT HERE IF NO TERMINAL
   (1)  111632  000430                          BR      3$              ;;LEAVE
   (1)  111634  010046                  1$:     MOV     R0,-(SP)        ;;SAVE R0
   (1)  111636  017600  000002                  MOV     @2(SP),R0       ;;GET ADDRESS OF ASCIZ STRING
   (1)  111642  122737  000001  001134          CMPB    #APTENV,$ENV    ;;RUNNING IN APT MODE
   (1)  111650  001011                          BNE     62$             ;;NO,GO CHECK FOR APT CONSOLE
   (1)  111652  132737  000100  001135          BITB    #APTSPOOL,$ENVM ;;SPOOL MESSAGE TO APT
   (1)  111660  001405                          BEQ     62$             ;;NO,GO CHECK FOR CONSOLE
   (1)  111662  010037  111672                  MOV     R0,61$          ;;SETUP MESSAGE ADDRESS FOR APT
   (1)  111666  004737  001156                  JSR     PC,$ATY3        ;;SPOOL MESSAGE TO APT
   (1)  111672  000000                  61$:    .WORD   0               ;;MESSAGE ADDRESS
   (1)  111674  132737- 000040  001135  62$:    BITB    #APTCSUP,$ENVM  ;;APT CONSOLE SUPPRESSED
   (1)  111702  001003                          BNE     60$             ;;YES,SKIP TYPE OUT
   (1)  111704  112046                  2$:     MOVB    (R0)+,-(SP)     ;;PUSH CHARACTER TO BE TYPED ONTO STACK
   (1)  111706  001005                          BNE     4$              ;;BR IF IT ISN'T THE TERMINATOR
   (1)  111710  005726                          TST     (SP)+           ;;IF TERMINATOR POP IT OFF THE STACK
   (1)  111712  012600                  60$:    MOV     (SP)+,R0        ;;RESTORE R0
   (1)  111714  062716  000002          3$:     ADD     #2,(SP)         ;;ADJUST RETURN PC
   (1)  111720  000002                          RTI                     ;;RETURN
   (1)  111722  122716  000011          4$:     CMPB    #HT,(SP)        ;;BRANCH IF <HT>
   (1)  111726  001430                          BEQ     8$
   (1)  111730  122716  000200                  CMPB    #CRLF,(SP)      ;;BRANCH IF NOT <CRLF>
   (1)  111734  001006                          BNE     5$
   (1)  111736  005726                          TST     (SP)+           ;;POP  <CR><LF> EQUIV
   (1)  111740  104401                          TYPE                    ;;TYPE A CR AND LF
   (1)  111742  111311                          $CRLF
   (1)  111744  105037  112162                  CLRB    $CHARCNT        ;;CLEAR CHARACTER COUNT
   (1)  111750  000755                          BR      2$              ;;GET NEXT CHARACTER
   (1)  111752  004737  112034          5$:     JSR     PC,$TYPEC       ;;GO TYPE THIS CHARACTER
```

```
(1)  111756  123726  112174          6$:     CMPB    $FILLC,(SP)+    ;;IS IT TIME FOR FILLER CHARS.?
(1)  111762  001350                          BNE     2$              ;;IF NO GO GET NEXT CHAR.
(1)  111764  013746  112172                  MOV     $NULL,-(SP)     ;;GET # OF FILLER CHARS. NEEDED
(1)                                                                  ;;AND THE NULL CHAR.
(1)  111770  105366  000001          7$:     DECB    1(SP)           ;;DOES A NULL NEED TO BE TYPED?
(1)  111774  002770                          BLT     6$              ;;BR IF NO--GO POP THE NULL OFF OF STACK
(1)  111776  004737  112034                  JSR     PC,$TYPEC       ;;GO TYPE A NULL
(1)  112002  105337  112162                  DECB    $CHARCNT        ;;DO NOT COUNT AS A COUNT
(1)  112006  000770                          BR      7$              ;;LOOP
(1)
(1)                                  ;HORIZONTAL TAB PROCESSOR
(1)
(1)  112010  112716  000040          8$:     MOVB    #' ,(SP)        ;;REPLACE TAB WITH SPACE
(1)  112014  004737  112034          9$:     JSR     PC,$TYPEC       ;;TYPE A SPACE
(1)  112020  132737  000007  112162          BITB    #7,$CHARCNT     ;;BRANCH IF NOT AT
(1)  112026  001372                          BNE     9$              ;;TAB STOP
(1)  112030  005726                          TST     (SP)+           ;;POP SPACE OFF STACK
(1)  112032  000724                          BR      2$              ;;GET NEXT CHARACTER
(1)  112034                          $TYPEC:
(1)  112034  105777  177254                  TSTB    @$TKS           ;;CHAR IN KYBD BUFFER?          ;MJD001
(1)  112040  100022                          BPL     10$             ;;BR IF NOT                     ;MJD001
(1)  112042  017746  177250                  MOV     @$TKB,-(SP)     ;;GET CHAR                      ;MJD001
(1)  112046  042716  177600                  BIC     #177600,(SP)    ;;STRIP EXTRANEOUS BITS         ;MJD001
(1)  112052  122716  000023                  CMPB    #$XOFF,(SP)     ;;WAS CHAR XOFF                 ;MJD001
(1)  112056  001012                          BNE     102$            ;;BR IF NOT                     ;MJD001
(1)  112060                          101$:                                                           ;MJD001
(1)  112060  105777  177230                  TSTB    @$TKS           ;;WAIT FOR CHAR                 ;MJD001
(1)  112064  100375                          BPL     101$                                            ;MJD001
(1)  112066  117716  177224                  MOVB    @$TKB,(SP)      ;;GET CHAR                      ;MJD001
(1)  112072  042716  177600                  BIC     #177600,(SP)    ;;STRIP IT                      ;MJD001
(1)  112076  122716  000021                  CMPB    #$XON,(SP)      ;;WAS IT XON?                   ;MJD001
(1)  112102  001366                          BNE     101$            ;;BR IF NOT                     ;MJD001
(1)  112104                          102$:                                                           ;MJD001
(1)  112104  005726                          TST     (SP)+           ;;FIX STACK                     ;MJD001
(1)  112106                          10$:                                                            ;MJD001
(1)  112106  105777  000054                  TSTB    @$TPS           ;;WAIT UNTIL PRINTER IS READY
(1)  112112  100375                          BPL     10$                                             ;MJD001
(1)  112114  126627  000002  000021          CMPB    2(SP),#$XON     ;;IS CHARACTER A RANDOM XON?    ;RAN001
(1)  112122  001420                          BEQ     $TYPEX          ;;BRANCH IF YES                 ;RAN001
(1)  112124  116677  000002  000036          MOVB    2(SP),@$TPB     ;;LOAD CHAR TO BE TYPED INTO DATA REG.
(1)  112132  122766  000015  000002          CMPB    #CR,2(SP)       ;;IS CHARACTER A CARRIAGE RETURN?
(1)  112140  001003                          BNE     1$              ;;BRANCH IF NO
(1)  112142  105037  112162                  CLRB    $CHARCNT        ;;YES--CLEAR CHARACTER COUNT
(1)  112146  000406                          BR      $TYPEX          ;;EXIT
(1)  112150  122766  000012  000002  1$:     CMPB    #LF,2(SP)       ;;IS CHARACTER A LINE FEED?
(1)  112156  001402                          BEQ     $TYPEX          ;;BRANCH IF YES
(1)  112160  105227                          INCB    (PC)+           ;;COUNT THE CHARACTER
(1)  112162  000000          $CHARCNT:.WORD  0               ;;CHARACTER COUNT STORAGE
(1)  112164  000207          $TYPEX: RTS     PC
(1)
(1)  112166  177564          $TPS:   .WORD   177564          ;;TTY PRINTER STATUS REG. ADDRESS
(1)  112170  177566          $TPB:   .WORD   177566          ;;TTY PRINTER BUFFER REG. ADDRESS
(1)  112172     000          $NULL:  .BYTE   0               ;;CONTAINS NULL CHARACTER FOR FILLS
(1)  112173     002          $FILLS: .BYTE   2               ;;CONTAINS # OF FILLER CHARACTERS REQUIRED
```

```
   (1)  112174     012                    $FILLC: .BYTE   12              ;;INSERT FILL CHARS. AFTER A ''LINE FEED''
   (1)  112175     000                    $TPFLG: .BYTE   0               ;;''TERMINAL AVAILABLE'' FLAG (BIT<07>=0=YES)
21265
   (1)                                    .SBTTL  TRAP DECODER
   (1)
   (2)                                    ;;**********************************************************************
   (1)                                    ;*THIS ROUTINE WILL PICKUP THE LOWER BYTE OF THE ''TRAP'' INSTRUCTION
   (1)                                    ;*AND USE IT TO INDEX THROUGH THE TRAP TABLE FOR THE STARTING ADDRESS
   (1)                                    ;*OF THE DESIRED ROUTINE. THEN USING THE ADDRESS OBTAINED IT WILL
   (1)                                    ;*GO TO THAT ROUTINE.
   (1)
   (1)  112176  010046                    $TRAP:  MOV     R0,-(SP)        ;;SAVE R0
   (1)  112200  016600  000002                    MOV     2(SP),R0        ;;GET TRAP ADDRESS
   (1)  112204  005740                            TST     -(R0)           ;;BACKUP BY 2
   (1)  112206  111000                            MOVB    (R0),R0         ;;GET RIGHT BYTE OF TRAP
   (1)  112210  006300                            ASL     R0              ;;POSITION FOR INDEXING
   (1)  112212  016000  112232                    MOV     $TRPAD(R0),R0   ;;INDEX TO TABLE
   (1)  112216  000200                            RTS     R0              ;;GO TO ROUTINE
   (1)
   (1)
   (1)                                    ;;THIS IS USE TO HANDLE THE ''GETPRI'' MACRO
   (1)
   (1)  112220  011646                    $TRAP2: MOV     (SP),-(SP)      ;;MOVE THE PC DOWN
   (1)  112222  016666  000004  000002            MOV     4(SP),2(SP)     ;;MOVE THE PSW DOWN
   (1)  112230  000002                            RTI                     ;;RESTORE THE PSW
   (1)
   (3)                                    .SBTTL  TRAP TABLE
   (3)
   (3)                                    ;*THIS TABLE CONTAINS THE STARTING ADDRESSES OF THE ROUTINES CALLED
   (3)                                    ;*BY THE ''TRAP'' INSTRUCTION.
   (3)
   (3)                                    ;       ROUTINE
   (3)                                    ;       -------
   (3)  112232  112220                    $TRPAD: .WORD   $TRAP2
   (3)  112234  111622                            $TYPE   ;;CALL=TYPE     TRAP+1(104401)  TTY TYPEOUT ROUTINE
   (1)
   (1)
   (3)  112236  111320                            $RDCHR  ;;CALL=RDCHR    TRAP+2(104402)  TTY TYPEIN CHARACTER ROUTINE
   (3)  112240  111450                            $RDLIN  ;;CALL=RDLIN    TRAP+3(104403)  TTY TYPEIN STRING ROUTINE
   (3)  112242  111132                            $RDDEC  ;;CALL=RDDEC    TRAP+4(104404)  READ A DECIMAL NUMBER FROM TTY
21266
   (1)                                    .SBTTL  POWER DOWN AND UP ROUTINES
   (1)
   (2)                                    ;;**********************************************************************
   (1)                                    ;POWER DOWN ROUTINE
   (1)  112244  012737  112404  000024    $PWRDN: MOV     #$ILLUP,@#PWRVEC ;;SET FOR FAST UP
   (1)  112252  012737  000340  000026            MOV     #340,@#PWRVEC+2 ;;PRIO:7
   (3)  112260  010046                            MOV     R0,-(SP)        ;;PUSH R0 ON STACK
   (3)  112262  010146                            MOV     R1,-(SP)        ;;PUSH R1 ON STACK
   (3)  112264  010246                            MOV     R2,-(SP)        ;;PUSH R2 ON STACK
   (3)  112266  010346                            MOV     R3,-(SP)        ;;PUSH R3 ON STACK
   (3)  112270  010446                            MOV     R4,-(SP)        ;;PUSH R4 ON STACK
   (3)  112272  010546                            MOV     R5,-(SP)        ;;PUSH R5 ON STACK
   (3)  112274  017746  067436                    MOV     @SWR,-(SP)      ;;PUSH @SWR ON STACK
   (1)  112300  010637  112410                    MOV     SP,$SAVR6       ;;SAVE SP
   (1)  112304  012737  112316  000024            MOV     #$PWRUP,@#PWRVEC ;;SET UP VECTOR
```

```
(1)  112312  000000                          HALT
(1)  112314  000776                          BR      .-2             ;;HANG UP
(1)
(2)                                     ;;*****************************************************************
(1)                                     ;POWER UP ROUTINE
(1)  112316  012737  112404  000024  $PWRUP: MOV     #$ILLUP,@#PWRVEC ;;SET FOR FAST DOWN
(1)  112324  013706  112410                  MOV     $SAVR6,SP       ;;GET SP
(1)  112330  005037  112410                  CLR     $SAVR6          ;;WAIT LOOP FOR THE TTY
(1)  112334  005237  112410          1$:     INC     $SAVR6          ;;WAIT FOR THE INC
(1)  112340  001375                          BNE     1$              ;;OF  WORD
(3)  112342  012677  067370                  MOV     (SP)+,@SWR      ;;POP STACK INTO @SWR
(3)  112346  012605                          MOV     (SP)+,R5        ;;POP STACK INTO R5
(3)  112350  012604                          MOV     (SP)+,R4        ;;POP STACK INTO R4
(3)  112352  012603                          MOV     (SP)+,R3        ;;POP STACK INTO R3
(3)  112354  012602                          MOV     (SP)+,R2        ;;POP STACK INTO R2
(3)  112356  012601                          MOV     (SP)+,R1        ;;POP STACK INTO R1
(3)  112360  012600                          MOV     (SP)+,R0        ;;POP STACK INTO R0
(1)  112362  012737  112244  000024          MOV     #$PWRDN,@#PWRVEC ;;SET UP THE POWER DOWN VECTOR
(1)  112370  012737  000340  000026          MOV     #340,@#PWRVEC+2 ;;PRIO:7
(1)  112376  104401                          TYPE                    ;REPORT THE POWER FAILURE
(1)  112400  112412                  $PWRMG: .WORD   $POWER          ;;POWER FAIL MESSAGE POINTER
(1)  112402  000002                          RTI
(1)  112404  000000                  $ILLUP: HALT                    ;;THE POWER UP SEQUENCE WAS STARTED
(1)  112406  000776                          BR      .-2             ;; BEFORE THE POWER DOWN WAS COMPLETE
(1)  112410  000000                  $SAVR6: 0                       ;;PUT THE SP HERE
(1)  112412  005015  047520  042527  $POWER: .ASCIZ  <15><12>''POWER''
(1)  112420  000122                                                  .
(1)                                           .EVEN
21268                                   ;*******************************************************************************
21273                000377             FILL=377
21274                076130             MOVCI=76130
21275                                   ;
21276                                   ;CIS STACK 'PROBE AHEAD'' MEMORY MANAGEMENT ABORT TESTS
21277                                   ;
21278                                   ;       NOTE: THESE THREE TESTS ARE FOR THE 11/44 ONLY
21279                                   ;       THEY ARE NOT TO BE RUN ON THE 11/23 OR 11/24 BECAUSE
21280                                   ;       THESE PROCESSORS TREAT PROBE AHEAD DIFFERENTLY - THEY
21281                                   ;       ONLY PROBE AHEAD SPECIFIC NUMBER OF WORDS NEEDED FOR
21282                                   ;       GIVEN INST.
21283                                   ;
21284                                   ;       THE NEXT THREE TESTS ARE AIMED AT TESTING THE KT
21285                                   ;       PAGE FAULT ROM (11/44 SCHEMATIC PAGE K1-8) AND ASSOCIATED LOGIC.
21286                                   ;
21287                                   ;       EACH OF THESE 3 TESTS SETUP THE STACK POINTER SUCH THAT
21288                                   ;       WHEN THE CIS PROCESSOR CHECKS TO SEE IF THERE IS ENOUGH
21289                                   ;       SPACE ON THE STACK (200 BYTES) THE ANSWER FOUND SHOULD BE
21290                                   ;       NO BECAUSE A PORTION OF THE STACK IS IN PROTECTED MEMORY.
21291                                   ;
21292                                   ;       EACH OF THESE 3 TESTS VERIFY THAT THE CIS INSTRUCTION ABORTS
21293                                   ;       UNDER SEVERAL CONDITIONS OF MEMORY MANAGEMENT PAGE PROTECTION.
21294                                   ;       ALL OF THE PAGE PROTECTION DATA IS LISTED IN TABLE 'PDRTAB'.
21295                                   ;
21296
21297
```

```
21298                                   ;SETUP PAR'S FOR DIRECT MAPPING
21299                                   ;
21300  112422  005737  002162          PROBAH: TST MMFLG               ;11/70 TYPE MEM MGMT?
21301  112426  001002                          BNE 4$                  ;BRANCH IF YES
21302  112430  000137  053622          5$:     JMP DONE                ;SKIP THESE MEM MGMT ABORT TESTS
21303
21304  112434  005737  002160          4$:     TST PT34                ;IS THIS AN 11/34 TYPE PROCESSOR?
21305  112440  001373                          BNE 5$                  ;BRANCH IF YES
21306  112442  005037  172516                  CLR @#MMR3              ;CLEAR OUT D-SPACE ENABLES
21307  112446  010637  113572                  MOV SP,STK1             ;SAVE STACK POINTER
21308
21309  112452  012737  000000  172340          MOV #0,@#KIPAR0         ;SETUP KERNEL I-SPACE PAR'S
21310  112460  012737  000200  172342          MOV #200,@#KIPAR1
21311  112466  012737  000400  172344          MOV #400,@#KIPAR2
21312  112474  012737  000600  172346          MOV #600,@#KIPAR3
21313  112502  012737  001000  172350          MOV #1000,@#KIPAR4
21314  112510  012737  001200  172352          MOV #1200,@#KIPAR5
21315  112516  012737  001400  172354          MOV #1400,@#KIPAR6
21316  112524  012737  177600  172356          MOV #177600,@#KIPAR7
21317
21318  112532  012737  000000  172240          MOV #0,@#SIPAR0         ;SETUP SUPERVISOR I-SPACE PAR'S
21319  112540  012737  000200  172242          MOV #200,@#SIPAR1
21320  112546  012737  000400  172244          MOV #400,@#SIPAR2
21321  112554  012737  000600  172246          MOV #600,@#SIPAR3
21322  112562  012737  001000  172250          MOV #1000,@#SIPAR4
21323  112570  012737  001200  172252          MOV #1200,@#SIPAR5
21324  112576  012737  001400  172254          MOV #1400,@#SIPAR6
21325  112604  012737  177600  172256          MOV #177600,@#SIPAR7
21326
21327  112612  012737  000000  177640          MOV #0,@#UIPAR0         ;SETUP USER I-SPACE PAR'S
21328  112620  012737  000200  177642          MOV #200,@#UIPAR1
21329  112626  012737  000400  177644          MOV #400,@#UIPAR2
21330  112634  012737  000600  177646          MOV #600,@#UIPAR3
21331  112642  012737  001000  177650          MOV #1000,@#UIPAR4
21332  112650  012737  001200  177652          MOV #1200,@#UIPAR5
21333  112656  012737  001400  177654          MOV #1400,@#UIPAR6
21334  112664  012737  177600  177656          MOV #177600,@#UIPAR7
21335
21336
21337                                   ;SETUP PDR'S FOR R/W ACCESS
21338                                   ;
21339
21340  112672  012700  172300                  MOV #KIPDR0,R0
21341  112676  012720  177406          1$:     MOV #177406,(R0)+
21342  112702  020027  172316                  CMP R0,#KIPDR7
21343  112706  101773                          BLOS 1$
21344
21345  112710  012700  172200                  MOV #SIPDR0,R0
21346  112714  012720  177406          2$:     MOV #177406,(R0)+
21347  112720  020027  172216                  CMP R0,#SIPDR7
21348  112724  101773                          BLOS 2$
21349
21350  112726  012700  177600                  MOV #UIPDR0,R0
21351  112732  012720  177406          3$:     MOV #177406,(R0)+
```

```
21352  112736  020027  177616          CMP R0,#UIPDR7
21353  112742  101773                  BLOS 3$
21354
```

```
21356                                   ;*****************************************************************************
21357                                   .SBTTL  MEMORY MGMT ABORT TESTS
21358                                   ;KERNEL MODE CIS STACK PROBE AHEAD MEM MGMT ABORT TESTS
21359                                   ;
21360
21361  112744                           KMTSTS:
21362  112744  005237  001120                   INC $TESTN                      ;UPDATE TEST NUMBER FOR APT
21363  112750  012737  113450  000250           MOV #MMHDLR,@#MMVEC             ;SETUP MEM MGMT INTERRRUPT VECTOR
21364  112756  012737  000340  000252           MOV #PR7,@#MMVEC+2
21365  112764  012701  113054                   MOV #1$,R1                      ;SETUP INTR RETURN ADDRESS
21366  112770  012700  113574                   MOV #PDRTAB,R0
21367  112774  012706  060070           3$:     MOV #60070,SP
21368
21369  113000  011037  172304           2$:     MOV (R0),@#KIPDR2               ;PROTECT PART OF STACK
21370  113004  012737  000001  177572           MOV #1,@#MMR0                   ;TURN ON MEMORY MGMT
21371
21372  113012  004737  113472                   JSR PC,SAVR                     ;SAVE REGISTERS
21373
21374  113016  076130                           MOVCI                           ;EXECUTE THE CIS INSTRUCTION
21375  113020  113462                           SRC.PTR
21376  113022  113466                           DST.PTR
21377  113024  000377                           FILL
21378  113026  000240                           NOP                             ;TO LOOP ON THIS TEST REPLACE
21379  113030  000240                           NOP                             ;  THE TWO NOPS WITH A JMP TO 3$.
21380  113032                                   PRINTB #NOABO                   ;PRINT  CIS INST FAILED TO ABORT
   (6) 113032  012746  013565                   MOV     #NOABO,-(SP)
   (3) 113036  010600                           MOV     SP,R0
   (4) 113040  004737  066232                   JSR PC,FPRINT
21381  113044  012737  000001  001114           MOV #1,$MSGTY                   ;SET APT FATAL ERROR INDICATOR  ;;REV-C
21382  113052  000000                           HALT                            ;CIS INSTRUCTION SHOULD HAVE ABORTED BUT DIDN'T
21383
21384  113054  004737  113524           1$:     JSR PC,RESR                     ;RESTORE REGISTERS
21385  113060  062700  000002                   ADD #2,R0                       ;UPDATE PROTECTION SCHEME TO NEXT TABLE CASE
21386  113064  005710                           TST (R0)                        ;ANY CASES LEFT TO TRY?
21387  113066  001344                           BNE 2$                          ;BRANCH IF YES
21388
21389  113070  005037  177572                   CLR @#MMR0                      ;NO - PREPARE TO EXIT TEST
21390  113074  012737  177406  172304           MOV #177406,@#KIPDR2            ;RESTORE R/W ACCESS TO STACK AREA
21391  113102  000400                           BR SMTSTS                       ;GO TO NEXT TEST
21392
21393
```

```
21395                                   ;*****************************************************************************
21396
21397                                   ;SUPERVISOR MODE CIS STACK PROBEAHEAD MEMORY MGMT ABORT TESTS
21398                                   ;
21399
21400  113104                           SMTSTS:
21401  113104  005237  001120                 INC $TESTN                      ;UPDATE TEST NUMBER FOR APT
21402  113110  012737  113450  000250         MOV #MMHDLR,@#MMVEC             ;SETUP MEM MGMT INTERRRUPT VECTOR
21403  113116  012737  040340  000252         MOV #040340,@#MMVEC+2
21404  113124  012701  113230                 MOV #1$,R1                      ;SETUP INTR RETURN ADDRESS
21405  113130  012700  113574                 MOV #PDRTAB,R0
21406  113134  012737  040340  177776         MOV #040340,@#PSW               ;SWITCH TO SUPERVISOR MODE
21407  113142  012706  060070           3$:   MOV #60070,SP
21408
21409  113146  011037  172204           2$:   MOV (R0),@#SIPDR2               ;PROTECT PART OF STACK
21410  113152  012737  000001  177572         MOV #1,@#MMR0                   ;TURN ON MEMORY MGMT
21411
21412  113160  004737  113472                 JSR PC,SAVR                     ;SAVE REGISTERS
21413
21414  113164  076130                         MOVCI                           ;EXECUTE THE CIS INSTRUCTION
21415  113166  113462                         SRC.PTR
21416  113170  113466                         DST.PTR
21417  113172  000377                         FILL
21418
21419  113174  000240                         NOP                             ;TO LOOP ON THIS TEST, REPLACE THE
21420  113176  000240                         NOP                             ;  TWO NOPS WITH A JMP TO 3$.
21421  113200  012737  000340  177776         MOV #340,@#PSW                  ;SWITCH BACK TO KERNEL MODE BEFORE HALT
21422  113206                                 PRINTB #NOABO                   ;PRINT CIS INST FAILED TO ABORT
   (6)  113206  012746  013565                 MOV     #NOABO,-(SP)
   (3)  113212  010600                         MOV     SP,R0
   (4)  113214  004737  066232                 JSR PC,FPRINT
21423  113220  012737  000001  001114         MOV #1,$MSGTY                   ;SET APT FATAL ERROR INDICATOR  ;;REV-C
21424  113226  000000                         HALT                            ;CIS INSTRUCTION SHOULD HAVE ABORTED BUT DIDN'T
21425
21426  113230  004737  113524           1$:   JSR PC,RESR                     ;RESTOERE REGISTERS
21427  113234  062700  000002                 ADD #2,R0                       ;UPDATE PROTECTION SCHEME TO NEXT TABLE CASE
21428  113240  005710                         TST (R0)                        ;ANY CASES LEFT TO TRY?
21429  113242  001341                         BNE 2$                          ;BRANCH IF YES
21430
21431  113244  005037  177572                 CLR @#MMR0                      ;NO - PREPARE TO EXIT TEST
21432  113250  012737  177406  172204         MOV #177406,@#SIPDR2            ;RESTORE R/W ACCESS TO STACK AREA
21433  113256  000400                         BR UMTSTS                       ;GO TO NEXT TEST
21434
21435
```

```
21437                                   ;*****************************************************************************
21438
21439                                   ;USER MODE CIS STACK PROBEAHEAD MEM MGMT ABORT TESTS
21440                                   ;
21441
21442  113260                           UMTSTS:
21443  113260  005237  001120                   INC $TESTN                      ;UPDATE TEST NUMBER FOR APT
21444  113264  012737  113450  000250         MOV #MMHDLR,@#MMVEC             ;SETUP MEM MGMT INTERRRUPT VECTOR
21445  113272  012737  140340  000252         MOV #140340,@#MMVEC+2
21446  113300  012701  113404                 MOV #1$,R1                      ;SETUP INTR RETURN ADDRESS
21447  113304  012700  113574                 MOV #PDRTAB,R0
21448  113310  012737  140340  177776         MOV #140340,@#PSW               ;SWITCH TO USER MODE
21449  113316  012706  060070           3$:   MOV #60070,SP
21450
21451  113322  011037  177604           2$:   MOV (R0),@#UIPDR2               ;PROTECT PART OF STACK
21452  113326  012737  000001  177572         MOV #1,@#MMR0                   ;TURN ON MEMORY MGMT
21453
21454  113334  004737  113472                 JSR PC,SAVR                     ;SAVE REGISTERS
21455
21456  113340  076130                         MOVCI                           ;EXECUTE THE CIS INSTRUCTION
21457  113342  113462                         SRC.PTR
21458  113344  113466                         DST.PTR
21459  113346  000377                         FILL
21460
21461  113350  000240                         NOP                             ;TO LOOP ON THIS TEST REPLACE THE
21462  113352  000240                         NOP                             ;  TWO NOPS WITH A JMP TO 3$.
21463  113354  012737  000340  177776         MOV #340,@#PSW                  ;SWITCH BACK TO KERNEL MODE BEFORE HALT
21464  113362                                 PRINTB #N0AB0                   ;PRINT CIS INST FAILED TO ABORT
   (6) 113362  012746  013565                 MOV     #N0AB0,-(SP)
   (3) 113366  010600                         MOV     SP,R0
   (4) 113370  004737  066232                 JSR PC,FPRINT
21465  113374  012737  000001  001114         MOV #1,$MSGTY                   ;SET APT FATAL ERROR INDICATOR  ;;REV-C
21466  113402  000000                         HALT                            ;CIS INSTRUCTION SHOULD HAVE ABORTED BUT DIDN'T
21467
21468  113404  004737  113524           1$:   JSR PC,RESR                     ;RESTORE REGISTERS
21469  113410  062700  000002                 ADD #2,R0                       ;UPDATE PROTECTION SCHEME TO NEXT TABLE CASE
21470  113414  005710                         TST (R0)                        ;ANY CASES LEFT TO TRY?
21471  113416  001341                         BNE 2$                          ;BRANCH IF YES
21472
21473  113420  005037  177572                 CLR @#MMR0                      ;NO - PREPARE TO EXIT TEST
21474  113424  012737  177406  177604         MOV #177406,@#UIPDR2            ;RESTORE R/W ACCESS TO STACK AREA
21475  113432  012737  000000  177776         MOV #0,@#PSW            ;SWITCH BACK TO KERNEL MODE
21476  113440  013706  113572                 MOV STK1,SP             ;RESTORE NORMAL STACK POINTER
21477  113444  000137  053622                 JMP DONE
21478
```

```
21480                                   ;MEMORY MANAGEMENT TRAP HANDLER
21481                                   ;
21482  113450                           MMHDLR:
21483  113450  005037  177572                   CLR @#MMR0                      ;TURN OFF MEM MGMT
21484  113454  005726                           TST (SP)+                       ;FIX UP STACK
21485  113456  005726                           TST (SP)+
21486  113460  000111                           JMP (R1)                        ;RETURN VIA R1
21487
21488
21489
21490                                   ;CIS INSTRUCTION SOURCE AND DESTINATION DESCRIPTORS
21491                                   ;
21492  113462  000001                   SRC.PTR:        .WORD 1
21493  113464  076000                                   .WORD 76000
21494  113466  000001                   DST.PTR:        .WORD 1
21495  113470  076001                                   .WORD 76001
21496
21497                                   ;SUBROUTINES
21498                                   ;
21499  113472  010037  113556           SAVR:   MOV R0,SVR0                     ;SAVE REGISTERS
21500  113476  010137  113560                   MOV R1,SVR1
21501  113502  010237  113562                   MOV R2,SVR2
21502  113506  010337  113564                   MOV R3,SVR3
21503  113512  010437  113566                   MOV R4,SVR4
21504  113516  010537  113570                   MOV R5,SVR5
21505  113522  000207                           RTS PC
21506
21507  113524  013700  113556           RESR:   MOV SVR0,R0                     ;RESTORE REGISTERS
21508  113530  013701  113560                   MOV SVR1,R1
21509  113534  013702  113562                   MOV SVR2,R2
21510  113540  013703  113564                   MOV SVR3,R3
21511  113544  013704  113566                   MOV SVR4,R4
21512  113550  013705  113570                   MOV SVR5,R5
21513  113554  000207                           RTS PC
21514
21515  113556  000000           SVR0:   .WORD 0
21516  113560  000000           SVR1:   .WORD 0
21517  113562  000000           SVR2:   .WORD 0
21518  113564  000000           SVR3:   .WORD 0
21519  113566  000000           SVR4:   .WORD 0
21520  113570  000000           SVR5:   .WORD 0
21521
21522  113572  000000           STK1:   .WORD 0
21523
21524                                   ;PROTECTION TABLE  (WORD FORMAT = PDR FORMAT)
21525  113574                           PDRTAB:
21526  113574  177000                           177000          ;ACF=00         ED=0  PLF=176
21527  113576  177410                           177410          ;ACF=00         ED=1  PLF=177
21528  113600  177400                           177400          ;ACF=00         ED=0  PLF=177
21529  113602  100010                           100010          ;ACF=00         ED=1  PLF=0
21530
21531  113604  177002                           177002          ;ACF=01         ED=0  PLF=176
21532  113606  177412                           177412          ;ACF=01         ED=1  PLF=177
21533  113610  177402                           177402          ;ACF=01         ED=0  PLF=177
```

```
21534  113612  100012                          100012          ;ACF=01         ED=1  PLF=0
21535
21536  113614  177004                          177004          ;ACF=10         ED=0  PLF=176
21537  113616  177414                          177414          ;ACF=10         ED=1  PLF=177
21538  113620  177404                          177404          ;ACF=10         ED=0  PLF=177
21539  113622  100014                          100014          ;ACF=10         ED=1  PLF=0
21540
21541  113624  177006                          177006          ;ACF=11         ED=0  PLF=176
21542  113626  177416                          177416          ;ACF=11         ED=1  PLF=177
21543  113630  000000                          0
21544
21545
21546
21548          120000                  .=120000
21553                                  .SBTTL          CIS INST EXECUTION STACK
21554                                  ;CIS INSTRUCTION EXECUTION STACK
21555                                  ;
21556  120000  000200                          .BLKW ^D128
21557  120400  111111                  PRECSK: .WORD 111111
21558  120402  000100                          .BLKW ^D64
21559  120602                          CSTACK:                         ;NOTE THIS STACK AREA IS INITIALIZED TO
21560                                                                  ;   055555 PRIOR TO EACH TEST.
21561  120602  111111                  PSTCSK: .WORD 111111
21562  120604  000000                  SAVKCC: .WORD 0
21563                                  .SBTTL          TRANSLATION TABLES FOR MOVTC
21564                                  ;TRANSLATION TABLES FOR MOVTC
21565                                  ;
21566  120606  000400                  XLTBL1: .BLKB ^D256
21567  121206                          ELTBL:
21568
21569
21570                                                  .EVEN
21571          000001                  .END
```

```
AADDN   007560            8675#  15633
AADDP   007664            8683#  15689
AASHN   007643            8681#  15675
AASHP   007745            8689#  15731
ABASE = 000000            6918
ABUFO   011452            8717#  14869
ACASZ   070506           11494   15506#
ACCOCT  065704           11323   11328   11333   14954   14958   14977#
ACCSEE  016175            8787#  11322
ACDW1 = 000000            6918
ACDW2 = 000000            6918
ACINST  002466            7294#  11495   15481   15485   15488   15506*  15507*  15508*  15509   15523
ACMPC   007540            8673#  15621
ACMPN   007600            8677#  15647
ACMPP   007704            8685#  15703
ACOUT   011340            8711#  14843   14858
ACPUOP= 000000            6918
ACVTLN  007653            8682#  15682
ACVTLP  007755            8690#  15738
ACVTNL  007610            8678#  15654
ACVTNP  007632            8680#  15668
ACVTPL  007714            8686#  15710
ACVTPN  007621            8679#  15661
ADDHDR  014041            8745#  14884
ADDW0 = 000000            6918
ADDW1 = 000000            6918
ADDW10= 000000            6918
ADDW11= 000000            6918
ADDW12= 000000            6918
ADDW13= 000000            6918
ADDW14= 000000            6918
ADDW15= 000000            6918
ADDW2 = 000000            6918
ADDW3 = 000000            6918
ADDW4 = 000000            6918
ADDW5 = 000000            6918
ADDW6 = 000000            6918
ADDW7 = 000000            6918
ADDW8 = 000000            6918
ADDW9 = 000000            6918
ADEVCT= 000000            6918
ADEVM = 000000            6918
ADIQ    040436           11429   11439   11458#
ADIVP   007735            8688#  15724
ADJEOP  046324           12505   12511   12516   12527#
ADJI    050576           12848   12864#
ADJR    051516           12849   12854   12858   12862   12869   13000#
AEADR   002200            7175#  12941*  14869
AEDTA   002202            7176#  12943*  14869
AENV  = 000000            6918
AENVM = 000000            6918
AFATAL= 000000            6918
ALOCC   007476            8669#  15597
AL2D    007766            8691#  15745
```

```
AL3D    010000            8692#  15751
AMADR1= 000000            6918
AMADR2= 000000            6918
AMADR3= 000000            6918
AMADR4= 000000            6918
AMAMS1= 000000            6918
AMAMS2= 000000            6918
AMAMS3= 000000            6918
AMAMS4= 000000            6918
AMATCH  007550            8674#  15627
AMOVC   007444            8666#  15579
AMOVRC  007454            8667#  15585
AMOVTC  007465            8668#  15591
AMSGAD= 000000            6918
AMSGLG= 000000            6918
AMSGTY= 000000            6918
AMTYP1= 000000            6918
AMTYP2= 000000            6918
AMTYP3= 000000            6918
AMTYP4= 000000            6918
AMULP   007725            8687#  15717
ANIB    070360           15447*  15448  15452#
APASS = 000000            6918
APRIOR= 000000            6918
APTCSU= 000040            6919#  21264
APTENV= 000001            6919#  21264
APTSIZ= 000200            6919#  11284  11293
APTSPO= 000100            6919#  21264
ARMQ    040502           11411   11413  11414  11446  11452  11456  11461  11463  11464  11471#
ASCANC  007516            8671#  15609
ASK     012416            8729#  11493
ASKDI   013223            8736#  11458
ASKINT  012725            8733#  11409
ASKMM   012617            8732#  11483
ASKMOD  012533            8731#  11480
ASKPC   007506            8670#  15603
ASKRM   012465            8730#  11471
ASKSRC  013110            8735#  11416
ASKST   013040            8734#  12756
ASPANC  007527            8672#  15615
AST     013767            8743#  14881
ASUBN   007570            8676#  15640
ASUBP   007674            8684#  15696
ASWREG= 000000            6918
ASZINS  004454            7824#  15478
ATESTN= 000000            6918
AUNIT = 000000            6918
AUSWR = 000000            6918
AVECT1= 000000            6918
AVECT2= 000000            6918
A3X     043324           11994   12012#
BAD     002232            7188#  14887  15040*
BITO  = 000001            6869#
BITOO = 000001            6869#  12832
```

```
BIT01 = 000002          6869#
BIT02 = 000004          6869#
BIT03 = 000010          6869#
BIT04 = 000020          6869#
BIT05 = 000040          6869#
BIT06 = 000100          6869#
BIT07 = 000200          6869#
BIT08 = 000400          6869#
BIT09 = 001000          6869#
BIT1  = 000002          6869#
BIT10 = 002000          6869#
BIT11 = 004000          6869#
BIT12 = 010000          6869#
BIT13 = 020000          6869#
BIT14 = 040000          6869#
BIT15 = 100000          6869#
BIT2  = 000004          6869#
BIT3  = 000010          6869#
BIT4  = 000020          6869#
BIT5  = 000040          6869#
BIT6  = 000100          6869#
BIT7  = 000200          6869#
BIT8  = 000400          6869#
BIT9  = 001000          6869#
BPTVEC= 000014          6869#
BS    = 000010          7078#
BSNULL= 177777  G       6883#  8066  8067  8068  8069  8070  8071  8072  8179  8180  8211  8212  8232
                        8233
BS0   = 170000  G       6872#  8247
BS00  = 100000  G       6873#
BS128 = 177740  G       6880#  8139  8146  8160  8171  8195  8198  8200  8219  8222  8244  8248  12450
                        14653
BS16  = 177400  G       6877#
BS2   = 174000  G       6874#  8035  8037  8038  8054  8056  8084  8085  8099  8100  8109  8121  8122
                        8162  8173
BS256 = 177760  G       6881#
BS32  = 177600  G       6878#
BS4   = 176000  G       6875#  8036  8055  8120  8141  8221  8246  14685
BS512 = 177770  G       6882#
BS64  = 177700  G       6879#
BS8   = 177000  G       6876#  8119  8197
BUFCK   051000          12896  12898#
BUFERR  051154          12925  12938#
BUFSR1  003045          7302   7371#
BUFSR2  003106          7304   7373#
BY    = 177400  G       6884#  8046  8065  8091  8106  8107  8130  8181  8230
CACHVE= 000114          6869#
CCCK    050622          12846  12853  12857  12861  12863  12868  12872#
CCREC   004022          7635#  15536
CERFLG  001742          7094#  12829  13677*  13679*
CERSAV  001744          7095#  12831*  12832
CFINL   053046          13046  13073  13081  13130  13197  13228  13234#
CISERR  051260          12948  12950  12952  12954  12960#
CISQ    012013          8721#  14098
```

```
CKUREG  055476          12812   13737#
CLKS    003032           7358#  12768*  14500*  14536*  14537*  14540*  14551*  14552*  14555*  14571   14572*
COMST   037456          11290   11301#  11311   13416
CONTRL= 177746           6869#
CONVN   070330          15401   15407   15427   15431   15443#
CPUERR= 177766           6869#
CR      000015           6869#   7075#   8718    8743    8775    8776    8777    8779    8784    8785    8786    8789    8794
                         8795    8796    8797    8804    8809    8810    8811    8812    8813    21264
CRLF  = 000200           6869#  15094   21264
CSCC    050220          12795   12797#
CSTACK  120602          12682   12683   14374   14377   14407   14410   21559#
CTACT   001766           7104#  14766*  15766   15792*
CTLC    042204          11775#  11783
DASH    016563           8801#  12983
DBLK    067160          15208   15229   15237#
DDISP = 177570           6869#   7088   11284   11293
DECINS  002444           7282#  11573*  11797*  11893   12024   12076   13034
DECPRT  070006          15309   15322   15335   15350   15364   15377#
DECTTB  004270           7730    7732#
DECTYP  004266           7730#  11669
DECZO   022322           9360    9367    9415    9443#
DEN     002166           7169#  11362*  11490*  13770   13878*  13882*  13887*  13890   13952   13981   14005   14028   14075
                        14104   14121   15782
DENS    001752           7098#  11282*  11292*  11338*  11384
DESTBU  003166           7393    7394#
DI      062012          11357*  11465*  14321#
DIC     061770          14203   14318#
DIGTBL  070364          15402   15408   15428   15432   15458#
DISPLA  001740           7088#  11284*  11293*  11729*
DISPRE  000174           6897#  11284   11293
DIVDD   003162           7392#  14207   14522
DIVDS   003156           7390#  14205   14206   14520   14521
DIVPI = 076175  G        6871#  14204   14519
DN      067620          15298   15302   15337#
DONE    053622          13355   13371#  21302   21477
DSCPTR= 152525  G        6895#   8153    8178    8210    8213    8231    8234    8257   14676
DSTYP0  043646          12058   12075#
DSTYP1  043712          12060   12088#
DSTYP2  043750          12062   12098#
DSTYP3  044050          12064   12119#
DSTYP4  044746          12072   12274#  12445
DSTYP5  046014          12073   12443#
DST.PT  113466          21376   21416   21458   21494#
DSWR  = 177570           6869#   7087   11284   11293
DTBL    067150          15210   15233#
DVTST   037276           6899   11271   11291#  11777   12996   13433
EADAD   024350           9728    9775#
EADAD1  024356           9771    9774    9776#
EADDN   023520           8961    9672#
EADDP   023510           8977    9670#  10822   10898   11098
EADIT   024634           9809    9828#
EADSB1  024046           9721    9724#
EADSUB  023600           9671    9673    9678    9680    9683#
EADSUM  025212           9665*   9776*   9899#
```

```
EAIS    024314          9738    9764    9769#
EANEG   025164          9725*   9772*   9801    9888#
EAODD   025222          9683*   9691*   9701    9746    9815    9903#
EASH    031030         10428   10430   10432#
EASHN   031024          8967   10431#
EASHP   030750          8983   10421#  10886   10913   10944   11036   11045   11062   11076   11105   11125
EASHR   031172         10448   10464#
EBACK   020050          9008#
EBADR   001646          7035#  12477   12533   12588   12617   12901   12928   13013
EBIS    024332          9765    9772#
EBLEN   001650          7036#
EBNEG   025166          9726*   9769*   9805    9889#
EBODD   025224          9684*   9694*   9717    9757    9821    9904#
EBUFO   011415          8716#  14868
ECARRY  025174          9648    9650    9655*   9659*   9664*   9783*   9836    9892#   9985*   9999   10435*  10489*  10491*
                       10503   10507*  10509*  10654   10663*
ECCR    003730          7598#  12524   12685   12872*  12876*  12878   14840   15537   15538
ECHAR   065562         14136   14938   14941#  14942   15008   15031   15522   15526
ECMOUT  020744          9154#   9167    9173    9175    9181
ECMP    032426         10675   10677   10680#
ECMPC   020664          8959    9138#
ECMPN   032422          8963   10678#
ECMPP   032346          8979   10668#  10953   10962
ECNSD   032622         10717#
ECODD   025226          9685*   9697*   9850    9861    9905#
ECOUN   027636         10173*  10175*  10177   10179   10182*  10263#
ECRID   031646         10561#
ECVT    025312          9942    9944#
ECVTLN  025276          8968    9941#
ECVTLP  025304          8984    9943#
ECVTNL  027074          8964   10146#
ECVTNP  030252          8966   10334#
ECVTPL  027102          8980   10148#
ECVTPN  027640          8965   10266#
ECO5    042760         11916   11924   11929   11931#
EC11    046304         12504   12510   12515   12518#
EDCAD   023364          9647#   9828    9995   10005
EDCOPA  025176          9647    9789*   9792*   9803*   9804*   9893#   9946*   9993*  10003*  10270*  10278*  10282   10338*
                       10346*  10350
EDCOPB  025200          9647*   9652*   9654*   9656    9658*   9660    9662*   9663*   9665    9797*   9800*   9807*   9808*
                        9830    9833    9894#   9947*   9994*   9996   10004*  10006   10271*  10285*  10292   10339*  10353*
                       10360
EDETSN  031466         10453   10495   10523#  10665
EDID    036162         11065   11069   11114   11117#
EDIVL   035642         11071#  11112
EDIVP   035250          8982   11015#
EFILL   020104          9011    9016    9019#   9022
EFILLZ  032260         10522   10649#  10664
EFILZ   031462         10474   10478   10497   10522#
EFINDA  025202          9309*   9310*   9311*   9312*   9313    9529*   9530*   9531    9895#
EFINDT  021500          9299    9303#  10284   10299
EFLO    027634         10149*  10188*  10195*  10200*  10206*  10209*  10214*  10227*  10229  10262#
EFMSD   030662         10276   10344   10401#
EFNDTZ  021702          9297    9344#  10352   10367
```

```
EFORWD  020070          9007    9014#
EGS1S   033102         10747   10758   10777#
EGS2S   033134         10752   10760   10784#
EGTOPA  024550          9791    9812#
EGTOPB  024602          9799    9820#
EINST   017440          8859*   8868    8890#
EINSTR  046310         11655*  12521#  21198*  21249*
EIRSTK  017442          8860*   8874    8891#
EIRT2   034332         10804   10937#  11018
EISP    033556         10844   10855#
EISTG   046112          7274   12086   12096   12117   12227   12272   12425   12431   12435   12439   12441   12467#
ELISTA  017470          8864    8870    8902#
ELISTB  017614          8871    8944#
ELOCC   021332          8955    9241#
ELSD    025236          9323    9346    9348    9356*   9357    9375*   9378    9533    9573    9581    9700*   9716*   9745*
                        9756*   9816*   9824*   9851*   9856*   9909#  10013*  10041*  10160*  10176*  10283*  10293*  10298*
                       10315*  10351*  10361*  10366*  10387*  10405*  10456*  10481*  10500*  10512*  10531*  10545*  10557*
                       10576*  10582*  10585*  10586*  10621*  10655*  10690*  10705*  10729*  10735*  10779*  10786*  10834*
                       10867*  15383*  15397*  15410
ELS1M   033200         10684*  10696*  10725   10796#
ELS2M   033202         10685*  10711*  10726   10797#
ELTBL   121206         11510   21567#
EL2     036330         11148#  11167   11171   11175   11180   11185
EL2D0   036324          8944   11147#
EL2D1   036430          8945   11165#
EL2D2   036436          8946   11169#
EL2D3   036444          8947   11173#
EL2D4   036452          8948   11177#
EL2D5   036466          8949   11182#
EL2D6   036502          8950   11187#
EL2D7   036546          8951   11198#
EL2324  001710          7069#  13583
EL3     036612         11210#  11223   11227   11231   11235   11239
EL3D0   036606          8969   11209#
EL3D1   036662          8970   11221#
EL3D2   036670          8971   11225#
EL3D3   036676          8972   11229#
EL3D4   036704          8973   11233#
EL3D5   036712          8974   11237#
EL3D6   036720          8975   11241#
EL3D7   037000          8976   11255#
EL44    001706          7068#  13604
EL74    001704          7067#  13585
EMADR   002204          7177#  12942*  14868
EMASK   025214          9546*   9553*   9554    9900#
EMATOT  020750          9156#   9208
EMDTA   002206          7178#  12944*  14868
EMID    034130         10853   10865   10905#
EMOUT   011152          8708#  14839
EMOVC   017736          8952    8987#
EMOVRC  020442          8953    9090#
EMOVTC  020160          8954    9035#
EMPTR   002146          7160#  11557*  11758*  13361*  14768   14832
EMRBKD  020556          9111#
```

```
EMRFIL  020604          9114    9118    9121#
EMRFWD  020574          9110    9117#   9120
EMSDP   030744         10303   10321   10371   10381   10402*  10413*  10417#
EMS2D   035164         10862*  10864*  10868   10994#
EMTBCK  020272          9056#
EMTCHC  021066          8960    9184#
EMTFIL  020366          9059    9067    9073#   9076
EMTFRD  020332          9055    9065#
EMTVEC= 000030          6869#
EMULAT  017230          8851#   12520
EMULP   033206          8981    10802#
EMVBR   035236         10803*  10888*  10889*  10900*  10914   11007#
ENCC    032252         10432*  10645#
ENDA    020776          9145    9164#   9171
ENDAD   053672          6910    11348   11518   13396#
ENDB    021036          9147    9174#   9179
ENDP    015661          8779#   13383
ENDQP   015751          8784#   13379
ENDA    025172          9785*   9788*   9795    9891#
ENULL   026424         10008*  10023*  10051   10071#  10153*  10183*  10268*  10290*  10306   10321   10336*  10358*  10374
                       10381
ENZI    032254          9835*   9849*   9864    10433*  10562*  10592*  10600   10646#
EODD    025220          9306    9526    9556    9676*   9679*   9701*   9717*   9746*   9757*   9815*   9821*   9850*   9861*
                        9902#   9944*   9951*  10150*  10156*  10272*  10275*  10340*  10343*  10458*  10483*  10501*  10513*
                       10532*  10547*  10558*  10577*  10620*  10656*  10691*  10706*  10730*  10736*  10780*  10787*  10829*
                       10831*  10858*  10860*  10861   10863*  15379*  15382*  15398*
EODDD   032246         10423*  10429*  10577   10643#
EODDS   032244         10422*  10426*  10483   10501   10532   10547   10642#
EODDS1  033174         10669*  10673*  10691   10730   10780   10794#
EODDS2  033176         10670*  10676*  10706   10736   10787   10795#
EOPA    025154          9739*   9751*   9763    9884#
EOPB    025156          9740*   9762*   9763    9885#
EOPSW   017446          8862*   8893#   9031*   9085*   9134*   9149*   9166*   9169*   9177*   9207*   9269*   9863*   9868*
                        9870*   9873*  10050*  10055*  10057*  10060*  10228*  10231*  10236*  10248*  10249   10253*  10269*
                       10280*  10308*  10312*  10320*  10323*  10337*  10348*  10376*  10380*  10383*  10391*  10599*  10602*
                       10606*  10629*  10718*  10765*  10767*  10821*  10885*  10897*  10912*  10914*  10928   10943*  10952*
                       10961*  11055   11087   11124*  11128*  11129*  11162*
EORSTK  017444          8861*   8892#   9001*   9005*   9023    9049*   9053*   9077    9104*   9108*   9126    9156    9261
                        9874   10061   10254   10324   10392   10630   10768   10820*  10884*  10896*  10911*  10917   10927
                       10942*  10951*  10960*  11123*  11154
EOT   = 125252  G       6888#   8047    8074    8092    8114    8131    8154    8167    8182    8214    8235    8258   14674
EPAK    026430          9295    9514    9670*   9672*   9674*   9681*   9941*   9943*  10073#  10146*  10148*  10266*  10335*
                       10421*  10431*  10438   10564   10578   10616   10668*  10678*  15275*  15285*  15297*  15301*  15394
EPMID   033554         10807   10810   10853#
EPOPS   026426         10014*  10015*  10026   10072#
EPOSD   035634         11056   11068#
EPOSS1  035474         11048#  11064
EPSW  = 177776          8847#   9031    9085    9134    9149    9166    9169    9177    9207    9269
EPUDTZ  023016          9516    9567#  10294   10317
EPUSH   022540          9514#   9852    9862   10025   10046   10049   10459   10514   10559   10589   10657
EPUTDT  022562          9518    9522#  10362   10388
EPZE    030034         10286   10296#
EPZ1    027720         10274   10276#  10295
ERMDON  065342         14872   14895   14897#
```

```
ERN     003674          7576#  12522   12530
ERNR    003712          7587#  12523   12624   12661   13012
EROUT   017436          8872*   8878    8889#
ERRBUF  002154          7163#  12841*  12938*  12951   14866
ERRCC   002150          7161#  12839*  12880*  12946   14856   14861
ERRCT   002060          7133#  11361*  12961*  12980   14922*
ERRREG  002152          7162#  12840*  12897*  12949   14841
ERRS    002062          7134#  12945*  12965*  12978
ERRSTK  002156          7164#  11744*  12822*  12953
ERRVEC= 000004          6869#  11284*  11293*  11345*  11346*  13647*  13650*  13653*  13675*  13681*
ERSAV   034250         10802   10927#  11015
ERSNEG  025170          9325*   9332*   9400*   9404*   9453*   9455*   9463*   9469*   9484*   9488*   9538*   9540    9589*
                        9593    9614    9631    9706    9710    9720    9770*   9773*   9775*   9777    9855*   9859*   9866
                        9890#  10009*  10048*  10053   10164   10301   10313*  10318   10369   10386*  10389   10539*  10553*
                       10604   10748   10753   10759   10761   10836   15415
ERT1    034526         10883   10893   10968#  11053
ERT2    034550         10891   10895   10906   10941   10969#  11101   11104   11110*  11115*  11118
ERT3    034572         10970#  11035   11037*  11049   11058   11061   11072   11075   11081   11093
ERT4    034614         10971#  11044   11046*  11051   11083   11085   11095   11097
ERT5    034636         10972#
ER0     003674          7577#  12490*  14838   15340
ER0R    003712          7588#  12642   12649*  12883   14840   14845
ER1     003676          7578#  12491*  14838   15341
ER1R    003714          7589#  12643   12650*  12885   14840
ER2     003700          7579#  12492*  14838   15345
ER2R    003716          7590#  12644   12651*  12887   14840
ER3     003702          7580#  12493*  14838   15346
ER3R    003720          7591#  12645   12652*  12889   14840
ER4     003704          7581#  12494*  14838   15348
ER4R    003722          7592#  12646   12653*  12891   14840
ER5     003706          7582#  12495*  14838   15349
ER5R    003724          7593#  12647   12654*  12893   14840
ER6     003710          7583#  12496*
ER6R    003726          7594#  12682*  12895   14840
ESBTD   035776         11088   11092#
ESCC    032036         10594   10598#
ESCF    026436          9948*   9968*  10028   10039   10076#
ESCNC   021254          8957    9226#
ESDC    030746         10401*  10410*  10413   10418#
ESEED   001750          7097#  11270*  11320   11339*
ESGN    032250         10644#
ESGNA   025204          9896#
ESGNB   025206          9897#
ESGNC   025210          9898#
ESISRC  031322         10451   10490   10493#  10520
ESKPC   021364          8956    9252#
ESLSD   025230          9346*   9375    9906#
ESNK    021456          9295#   9702    9718    9750    9761    9817    9825   10162   10181   10409   10484   10502   10533
                       10548   10583   10622   10692   10707   10731   10737   10781   10788   10835   10869   15406   15412
ESOPSW  034700         10912   10928*  10976#  11124   11128
ESOSTK  034676         10911   10927*  10975#  11123
ESPNC   021176          8958    9211#
ESPND   021412          9215    9223    9230    9238    9245    9249    9256    9260#
ESPOS   035162         10855*  10881   10902*  10993#  11017*  11063*  11068   11111*
```

```
ESR0    034702          10816   10929*  10949   10977#  11030   11136
ESR1    034704          10817   10930*  10950   10978#  11031   11134
ESR2    034706          10827   10833   10834   10856   10862   10867   10931*  10958   10979#  11039
ESR3    034710          10832   10866   10932*  10959   10980#  11040
ESR4    034712          10909   10933*  10981#  11121
ESR5    034714          10910   10934*  10982#  11122
ESS1SN  035244          11010#  11023*  11113
ESS2SN  035242          11009#  11028*  11113
ESTORE  017422           8851*   8852*   8853*   8854*   8855*   8856*   8879    8880    8881    8882    8883    8884    8888#
ESUBCT  035246          11011#  11078*  11089*  11106*  11107*  11108*  11109*  11110
ESUBF   025232           9675*   9682*   9704    9381*   9907#
ESUBN   023566           8962    9681#
ESUBP   023526           8978    9674#  11054   11086
ES1     025160           9703*   9708*   9727    9770    9775    9886#  10163*  10166*  10225   10238   10251   10300*  10305*
                        10310   10313   10368*  10373*  10378   10386
ES1D    033166          10732*  10738   10791#
ES1NSD  033170          10700*  10719   10722   10792#
ES2     025162           9719*   9722*   9727    9773    9887#
ES2NSD  033172          10715*  10719   10793#
ETLSD   033204          10445*  10456   10512   10556   10557   10621   10655   10798#
ETMPR0  032236           9303*   9334    9344*   9373    9522*   9561    9567*   9577    10639#
ETMPR1  032240           9304*   9323    9330    9335    9345*   9348    9350    9352    9374    9380    9383    9392    9407
                         9412    9419    9423    9430    9523*   9533    9535    9562    9568*   9573    9578    9583    9586
                         9591    9606    9609    9622    9628    9638   10640#
ETMPR2  032242           9525*   9563    9570*   9579   10641#
ETNZI   032256          10434*  10517*  10535   10647#  10661*
ETOPSW  034716          10806   10809   10821   10823*  10824   10885   10887*  10888   10897   10899*  10900   10943   10952
                        10961   10983#  11020   11022*  11023   11025   11027*  11028
ETRSTK  034662          10820   10884   10896   10942   10951   10960   10974#
ETSTS1  034406          10805   10947#  11019
ETSTS2  034456          10808   10956#  11024
EVRTAB  026164           9778    9780    9782    9841    9952    9956    9986   10010   10020   10070#  10454   10510   10555
                        10566   10570   10613   10652
EVRTAD  025524           9982    9985#
EVTABA  026442           9988   10078#
EVTPAS  026434           9784*   9829*   9832    9839*   9840    9975*   9976    9983*   9987   10075#
EVTSGN  026432           9958*   9961*  10009   10074#
EVTSSV  026440           9724*   9832*   9840*   9857    9871    9945*   9992*  10002*  10058   10077#  10267*  10287*  10290
                        10334*  10355*  10358
EVTWRP  025640           9977   10008#
EVTXT   025774          10030   10032   10036#
EVXTBP  035234          10814*  10819   10825   10843   10848   10849*  10876*  10877*  10878*  10880   11006#
EVXTVB  035232          10815*  10824*  10850*  10873*  10874*  10875*  10889   11005#
EXLTCS  063052          14503   14505   14524#
EXL2    036360          11154#  11196   11205   11219   11253   11265
EXMD    034216          10917#  11126
EXT     024666           9796    9835#
EXTBK   064056          11782   14732#
EXTBP   035166          10814   10878   10995#
EXTVB   035210          10815   10875   11004#
EXTYP   044522          12168   12169   12182   12204   12209   12211   12224   12227#
EXT1    025046           9863#
EXZD    036246          11066   11128#
EZDBCK  051112          12882   12927#
```

```
EZDBEG  036320          11134* 11142# 12931
EZDEND  036322          11136* 11137* 11138* 11143# 12933  12934
EZDF    036316           8857* 11016* 11131* 11141# 12873  12881  15266
EZDSC   034660          10813  10938  10948  10957  10973#
EZLE    027432          10178  10218#
EZL1    027110          10147  10149#
EZL2    027210          10165  10173#
EZPE    030444          10354  10364#
EZP1    030330          10342  10344# 10363
E0      017450           8873   8894#  8988   8991   8999   9004   9030   9036   9039   9047   9052   9084   9091
                         9094   9102   9107   9133   9138   9184   9212   9227   9243   9254   9677   9686   9689
                         9699   9700   9730   9732   9733   9737   9745   9747   9786*  9814   9949   10011  10013
                        10014  10016  10031  10036  10041  10042  10058  10062  10154  10159  10160  10173  10176
                        10177  10270  10273  10283  10297  10298  10338  10351  10365  10366  10404  10405  10424
                        10436  10469  10481  10500  10530  10531  10541  10544  10545  10671  10680  10688  10690
                        10698  10729  10742  10778  10779  10816* 10845* 10879* 10890* 10905* 10929  10937* 10949*
                        10958* 11030* 11039* 11048* 11057* 11071* 11080* 11092* 11100* 11117* 11147  11149* 11155
                        11190* 11200* 11209  11211* 11244* 11257*
E00     026636          10078  10109#
E01     026637          10079  10110#
E02     026640          10080  10111#
E03     026641          10081  10112#
E04     026642          10082  10113#
E05     026644          10083  10114#
E06     026646          10084  10115#
E07     026650          10085  10116#
E08     026653          10086  10117#
E09     026656          10087  10118#
E1      017452           8895#  8987   8996   9006   9008   9015   9035   9044   9054   9056   9066   9090   9099*
                         9100*  9109   9111   9139   9142   9185   9188   9211   9213   9226   9228   9241   9252
                         9698   9743   9813   10018  10044  10063  10161  10180  10281  10296  10349  10364  10403
                        10479  10498  10529  10543  10686  10727  10777  10817* 10846* 10880* 10891* 10906* 10930
                        10938* 10950* 10959* 11031* 11040* 11049* 11058* 11072* 11081* 11093* 11101* 11118* 11150*
                        11156  11166  11191* 11201* 11212* 11222  11245* 11258*
E1DID   035624          11026  11065#
E1XT    034720          10825  10838  10840* 10842* 10846  10984# 10995
E1XZD   035630          11021  11066#
E10     026661          10088  10119#
E11     026665          10089  10120#
E12     026671          10090  10121#
E13     026675          10091  10122#
E14     026701          10092  10123#
E15     026706          10093  10124#
E16     026713          10094  10125#
E17     026720          10095  10126#
E18     026726          10096  10127#
E19     026734          10097  10128#
E2      017454           8896#  8990   8991   8997   9000   9030   9038   9039   9045   9048   9084   9093   9094
                         9100   9103   9133   9140   9186   9204   9264   9687   9692   9715   9716   9729   9730
                         9734   9756   9758   9793*  9823   9953   10271  10293  10314  10315  10327  10339  10341
                        10361  10384  10387  10395  10427  10442  10563  10572  10576  10593  10608  10614  10633
                        10674  10682  10703  10705  10713  10735  10785  10786  10812* 10847* 10882* 10892* 10909*
                        10931  10940* 10947* 10956* 11034* 11043* 11050* 11060* 11074* 11082* 11094* 11103* 11121*
                        11152* 11157  11170  11193* 11203* 11214* 11226  11247* 11260*
```

```
E2XT    034742          10985#  10996
E20     026742          10098   10129#
E21     026751          10099   10130#
E22     026760          10100   10131#
E23     026767          10101   10132#
E24     026776          10102   10133#
E25     027006          10103   10134#
E26     027016          10104   10135#
E27     027026          10105   10136#
E28     027037          10106   10137#
E29     027050          10107   10138#
E3      017456           8897#   8989    9003    9006    9009    9037    9051    9054    9057    9092    9097    9101    9121
                         9141    9143    9187    9189    9197    9203    9265    9714    9754    9822    9954    10291   10316
                        10328   10359   10385   10396   10584   10634   10701   10733   10784   10813*  10848*  10883*  10893*
                        10910*  10932   10941*  10948*  10957*  11035*  11044*  11051*  11061*  11075*  11083*  11095*  11104*
                        11122*  11153*  11158   11174   11194*  11204*  11215*  11230   11248*  11261*
E3XT    034764          10986#  10997
E30     027061          10108   10139#
E4      017460           8898#   9021    9028    9075    9082    9124    9131    9161    9168    9170    9176    9178    9220
                         9235    9246    9257    9266    9688    9695    9842*   9845    10066   10259   10329   10397   10447
                        10466   10485   10537   10773   10818*  10881*  10894*  10907*  10933   10939*  11032*  11041*  11052*
                        11059*  11073*  11084*  11096*  11102*  11119*  11159   11178   11179*  11217*  11234   11250*  11263*
E4XT    035006          10987#  10998
E5      017462           8899#   9029    9062    9070    9083    9132    9162    9218    9233    9267    9844    9860    9880
                        10067   10260   10330   10398   10636   10774   10819*  10895*  10908*  10934   11033*  11042*  11053*
                        11085*  11097*  11120*  11160   11183   11184*  11218*  11238   11251*  11264*
E5XT    035030          10988#  10999
E6      017464           8876    8900#  11161   11188   11195*  11242   11252*
E6XT    035052          10989#  11000
E7XT    035074          10990#  11001
E8XT    035116          10991#  11002
E9XT    035140          10843   10992#  11003
FATAL   002136           7156#  11367*  11651*  12748*  12964   13243*  13246*  13701*  13716*  14184*  14517*
FCRTN   042414          11785   11796   11809   11821   11824   11834#  11840   11848   11853   11865   11867   11879   11911
                        11931   11962   11971   12039   12481   12525   12823   13436   13571
FC00    054032           6982    6996    6997   13435#
FC01    042216           6983   11780#
FC02    042426           6984   11837#
FC03    042526           6985   11862#
FC04    042576           6986   11881#
FC05    042704           6987   11913#
FC06    043012           6988   11940#
FC07    043122           6989   11964#
FC10    046114           6990   12470#
FC11    046150           6991   12483#
FC12    046346           6992   12536#
FC13    050400           6993   12826#
FC14    051560           6994   13019#
FC15    054502           6995   13564#
FDIALG  040712          11405   11407   11496   11502#
FILL =  000377          21273#  21377   21417   21459
FILLPB  066156          14885   15037#
FILLS2  002300           7207#  11741*  11998   12004*  14865*
FINEM   046320          12489   12525#
```

```
FLE     053264          13269   13272#
FLODIS  001526           6981#  11769
FLOPTR  001746           7096#  11754*  11761   11834*  12012*  12013   12040*  12586*  12613*  12639*  12864*  13444   13459
                        13473   13486   13500   13512
FORM1   010012           8694#  15582   15588
FORM10  010666           8703#  15664   15671
FORM11  010740           8704#  15678   15734
FORM12  011022           8705#  15685   15741
FORM13  011200           8709#  14838
FORM14  011260           8710#  14840
FORM15  011366           8712#  14849
FORM16  011375           8713#  14851
FORM17  011401           8714#  14859
FORM18  011411           8715#  14863
FORM19  014002           8744#  14887
FORM2   010072           8695#  15594
FORM20  014125           8746#  14888
FORM21  014160           8747#  14767   15789   15791
FORM22  014163           8748#  15306
FORM23  014200           8749#  15319   15330
FORM24  014216           8750#  15317   15332
FORM25  014234           8751#  15337
FORM26  014257           8752#  15351
FORM27  014302           8753#  15389
FORM3   010160           8696#  15600   15606
FORM30  014306           8754#  15765
FORM31  014336           8755#  15764
FORM32  014342           8756#  15420
FORM33  014362           8757#  15433
FORM34  014366           8758#  15417
FORM35  014373           8759#  15419
FORM36  014400           8760#  11584   12970
FORM37  014462           8761#  12980
FORM38  014501           8762#  13763
FORM39  014560           8763#  13764
FORM4   010226           8697#  15612   15618
FORM40  014653           8764#  15768
FORM41  014733           8766#  15748   15754
FORM42  015031           8767#  14194   14511
FORM43  015120           8768#  14195   14512
FORM44  015201           8769#  14245
FORM45  015254           8770#  14246
FORM46  015333           8771#  14247
FORM47  015404           8772#  14281
FORM48  015465           8773#  14269
FORM49  015543           8774#  14270
FORM5   010302           8698#  15624
FORM6   010366           8699#  15630
FORM7   010440           8700#  15636   15643   15692   15699   15720   15727
FORM8   010534           8701#  15650   15706
FORM9   010612           8702#  15657   15713
FPRINT  066232          11308   11322   11401   11406   11409   11416   11455   11457   11458   11471   11480   11483   11493
                        11584   12756   12819   12821   12834   12970   12980   12982   12983   13760   13763   13764   13770
                        14074   14075   14098   14103   14104   14120   14121   14191   14194   14195   14226   14229   14242
```

```
                    14245   14246   14247   14266   14269   14270   14278   14281   14299   14302   14508   14511   14512
                    14767   14835   14837   14838   14839   14840   14843   14849   14851   14858   14859   14863   14868
                    14869   14884   14887   14888   15053#  15306   15317   15319   15330   15332   15337   15351   15389
                    15417   15419   15420   15433   15448   15579   15582   15585   15588   15591   15594   15597   15600
                    15603   15606   15609   15612   15615   15618   15621   15624   15627   15630   15633   15636   15640
                    15643   15647   15650   15654   15657   15661   15664   15668   15671   15675   15678   15682   15685
                    15689   15692   15696   15699   15703   15706   15710   15713   15717   15720   15724   15727   15731
                    15734   15738   15741   15745   15748   15751   15754   15764   15765   15768   15781   15789   15791
                    21380   21422   21464
FRM40A  014721       8765#  15781
FSAVR1  002076       7140#  15058*  15133
FSAVR2  002074       7139#  15057*  15132
FSAVR3  002072       7138#  15056*  15131
FSAVR4  002070       7137#  15055*  15130
FSAVR5  002066       7136#  15054*  15129
FSHDR   016004       8785#  11526
FSHDR1  016260       8789#  11555   13641*
FSHDR2  016313       8794#  13419
FSHDR3  016347       8795#  13421
FSHDR4  016430       8796#  13423
FSHDR5  016514       8797#  13425
FSRUN   002100       7141#  11287*  11300*  11392   11515   11775   12987   13409   13857
GENRI   063562      11595   14651#  14656   14661
GETSGN  045326      12300   12338   12345#  12373   12378
GNS     = ****** U   6897   21265
GO      050156      12782   12784#
GPTESZ  053336      13284   13289#
GRPDB   046072      12404   12460#
GRZDB   046026      12315   12447#  12462
HERE    053706      13390   13407#
HIADRS= 177742       6869#
HITMIS= 177752       6869#
HLTLOC  002174       7173#  13761*  13770   14192*  14227*  14243*  14267*  14279*  14300*  14509*
HLTMSG  012173       8725#  13760   14191   14226   14242   14266   14278   14299   14508
HLTSER  060100      11345   13632*  13633*  13681   14068#
HT      = 000011     6869#  21264
IADDN   077360       7925   17845#
IADDN1  077434       7927   17886#
IADDN2  077510       7929   17929#
IADDN3  077564       7931   17972#
IADDN4  077640       7933   18019#
IADDN5  077714      18059#
IADDP   077024       7915   17628#
IADDP1  077100       7917   17669#
IADDP2  077154       7919   17713#
IADDP3  077230       7921   17757#
IADDP4  077304       7923   17804#
IASHN   101754       7981   19087#
IASHN1  102030       7983   19135#
IASHN2  102104       7985   19171#
IASHP   101550       7975   18961#
IASHP1  101624       7977   19009#
IASHP2  101700       7979   19048#
ICLP    076004       7891   17181#
```

```
ICLP1   076060          7893    17218#
ICLP2   076134          7895    17254#
ICLZ    076210          7897    17291#
ICLZ1   076264          7899    17327#
ICMPC   073614          7839    16129#
ICMPC1  073670          7841    16170#
ICMPC2  073744          7843    16216#
ICMPN   101214          7965    18743#
ICMPN1  101270          7967    18785#
ICMPN2  101344          7969    18830#
ICMPN3  101420          7971    18875#
ICMPN4  101474          7973    18922#
ICMPP   100660          7955    18536#
ICMPP1  100734          7957    18576#
ICMPP2  101010          7959    18618#
ICMPP3  101064          7961    18660#
ICMPP4  101140          7963    18704#
ICOMPC  002220          7183#   12578*  12579*  14263
ICPL    076340          7901    17364#
ICPL1   076414          7903    17403#
ICPL2   076470          7905    17443#
ICPL3   076544          7907    17478#
ICPZ    075450          7881    16988#
ICPZ1   075524          7883    17028#
ICZL    076620          7909    17515#
ICZL1   076674          7911    17554#
ICZL2   076750          7913    17592#
ICZP    075600          7885    17067#
ICZP1   075654          7887    17107#
ICZP2   075730          7889    17144#
IDFLD   063740         14675    14697#  14699
IDINFO  055714         13762    13770#  14193   14228   14244   14268   14280   14301   14510
IDINST  064240         11560    13365   14741   14765#
IDIVP   102720          8003    19550#
IDIVP1  102774          8005    19591#
IDIVP2  103050          8007    19636#
IDIVP3  103124          8009    19680#
IDIVP4  103200          8011    19727#
IDIVP5  103254          8013    19767#
IDIVP6  103330          8015    19807#
IDUM    072776         11478    13430   14657*  14668   14669   14700   14702   14704   14706*  14707   14709   14710*  15493*
                       15804#
IDUME   073050         14698    15825#
ID1     042200         11615*   11620*  11623   11625*  11626*  11627   11628*  11772#
ID2     042202         11616*   11622*  11629   11631*  11632*  11633   11634*  11773#
ILATEN  004112          7668#   14309   14456
ILLSER  060226         11340    13630*  13631*  13674   14087#
ILOCC   073410          7833    16017#
ILOCC1  073464          7835    16054#
ILOCC2  073540          7837    16091#
IL2D    073054          8018    11390   15839#
IL3D    073130          8020    15868#
IMATC   074634          7863    16612#
IMATC1  074710          7865    16658#
```

```
IMATC2  074764          7867    16703#
IMOVC   073204          7827    15897#
IMOVC1  073260          7829    15940#
IMOVC2  073334          7831    15978#
IMOVR   074020          7845    16258#
IMOVR1  074074          7847    16302#
IMOVR2  074150          7849    16341#
IMOVT   074224          7851    16379#
IMOVT1  074300          7853    16423#
IMOVT2  074354          7855    16463#
IMULP   102160          7987    19210#
IMULP1  102234          7989    19253#
IMULP2  102310          7991    19297#
IMULP3  102364          7993    19341#
IMULP4  102440          7995    19388#
IMULP5  102514          7997    19428#
IMULP6  102570          7999    19468#
IMULP7  102644          8001    19509#
INCSQ1  001660          7057#   11288*  11955   13427*  14717*
INCSQ2  001662          7058#   11289*  11956   13428*  14719*
INEM    070704         11757    13360   15545#
INLINE  046452         12546    12553#
INMEM   011124          8707#   14835
INO     001436          6947#   11753
INPTBL  073052         11390*   11478*  11502   13430*  13431   15495*  15832#
INPTP   002140          7157#   11502*  11598   11750   13254   13331   13332*  13333*  13334*  13335   13339   13348   13352
                       13358    13431*
INREG   011076          8706#   14837
INSERR  064430         12984    14831#
INSIGN  044720         12256    12268#
INSRC1  002504          7301#   12003   12005*  15307   15308   15320   15321
INSRC2  002510          7303#   12000   12001*  15333   15334
INSTID  004370          7768#   11619
INTCT   002552          7325#   12747*  14183*  14516*  15768
INTRVL  002562          7329#   14201*  14212   14222*  14223   14253*  14254   14287*  14294   14436*
INVTC   001422          6928#   11505*  11933*
IOTVEC= 000020          6869#
IPNU    001656          7055#   13250   13251   13332   13333
IRXLT   002176          7174#   14709*  14710
ISCAN   075040          7869    16744#
ISCAN1  075114          7871    16787#
ISCAN2  075170          7873    16825#
ISKPC   074430          7857    16502#
ISKPC1  074504          7859    16538#
ISKPC2  074560          7861    16574#
ISPAN   075244          7875    16866#
ISPAN1  075320          7877    16909#
ISPAN2  075374          7879    16947#
ISTG    043476         11988    12007   12029   12035   12043#
ISUBN   100324          7945    18319#
ISUBN1  100400          7947    18360#
ISUBN2  100454          7949    18405#
ISUBN3  100530          7951    18448#
ISUBN4  100604          7953    18495#
```

```
ISUBP   077770          7935    18100#
ISUBP1  100044          7937    18143#
ISUBP2  100120          7939    18187#
ISUBP3  100174          7941    18231#
ISUBP4  100250          7943    18278#
ITYPE   001426          6937#   11602
IXLTB1  001734          7086#   16477
KBR2    001700          7065#   21246
KBR3    001676          7064#   21251
KBR5    001674          7063#   12668
KDPAR0= 172360          6869#   13654   13817*
KDPAR1= 172362          6869#   13818*
KDPAR2= 172364          6869#   13819*
KDPAR3= 172366          6869#   13820*
KDPAR4= 172370          6869#   13821*
KDPAR5= 172372          6869#   13822*
KDPAR6= 172374          6869#   13823*
KDPAR7= 172376          6869#   13824*
KDPDR0= 172320          6869#   13921   13968*
KDPDR1= 172322          6869#   14040*
KDPDR2= 172324          6869#
KDPDR3= 172326          6869#
KDPDR4= 172330          6869#
KDPDR5= 172332          6869#   13963*
KDPDR6= 172334          6869#
KDPDR7= 172336          6869#   13923   13961*
KERSTK= 001100          6869#
KHALT   001672          7062#   12583   12669   12670   12671   12672   12673   21247   21248   21252
KIPAR0= 172340          6869#   13648   13835*  21309*
KIPAR1= 172342          6869#   13836*  21310*
KIPAR2= 172344          6869#   13837*  21311*
KIPAR3= 172346          6869#   13838*  21312*
KIPAR4= 172350          6869#   13839*  21313*
KIPAR5= 172352          6869#   13840*  21314*
KIPAR6= 172354          6869#   13841*  21315*
KIPAR7= 172356          6869#   13842*  21316*
KIPDR0= 172300          6869#   13931   13947*  13949*  21340
KIPDR1= 172302          6869#   13944*
KIPDR2= 172304          6869#   13943*  21369*  21390*
KIPDR3= 172306          6869#   13941*
KIPDR4= 172310          6869#   13940*
KIPDR5= 172312          6869#   13955*
KIPDR6= 172314          6869#
KIPDR7= 172316          6869#   13933   13938*  21342
KMTSTS  112744         21361#
KNOP    001670          7061#   11465   11508   14920   14933
KNOP1   002554          7326#   14437
KNOP2   002556          7327#   14465
KNOP3   002560          7328#
KNOP4   003040          7361#   14573
KRNCON  064422         11387    14818#
KRP1    064424         11388    14819#
KRP2    064426         11389    14820#
KSORU   060530         11481    14129#
```

```
KSP    =%000006          6869#
KW11L    013704          8742#  11401
LATCT    002546          7323#  14170*  14294*  14297   14310   14313
LATEN    002550          7324#  11364*  14213   14455*
LATEND   004200          7695#  14458
LATEXC   012260          8727#  14302
LCNT     003034          7359#  11363*  12766   14553*  14556*
LDCOD    041434         11624   11630   11635   11649#
LDCON    064034         11597   14715#
LDINPT   063622         11596   14668#
LERMD    065346         14878   14898#
LF     = 000012          6869#   7076#   8718    8743    8775    8776    8777    8779    8784    8785    8786    8789    8794
                         8795    8796    8797    8804    8809    8810    8811    8812    8813   21264
LIMSTG   001776          7108#
LKS    = 177546          6869#
LKVEC  = 000100          6869#
LOADRS= 177740           6869#
LODT     065114         14867   14870#  14883
LSUPR    063116         14535   14540#
LTCCNT   063136         11404   11445   14549#
LTCDLY   003042          7362#  13598*  13615*  13673*  14556
LTCINT   063164         14550   14555#
LTCIP    003030          7357#  13711*  13726*
LTCIS    062662         13629*  14496#  14541   14557
LTCIV    003026          7356#  14535*  14541*  14550*  14557*
LTCP     063212         11397   11442   14565#
LTCSUP   063074         11403   11444   12767   14534#
LTSTOP   047342         12552   12666   12675#
MADDN    006250          7710    8190#
MADDP    006250          7718    8189#
MAINT  = 177750          6869#
MAPH0  = 170202          6869#
MAPH00= 170202           6869#
MAPH01= 170206           6869#
MAPH02= 170212           6869#
MAPH03= 170216           6869#
MAPH04= 170222           6869#
MAPH05= 170226           6869#
MAPH06= 170232           6869#
MAPH07= 170236           6869#
MAPH1  = 170206          6869#
MAPH10= 170242           6869#
MAPH11= 170246           6869#
MAPH12= 170252           6869#
MAPH13= 170256           6869#
MAPH14= 170262           6869#
MAPH15= 170266           6869#
MAPH16= 170272           6869#
MAPH17= 170276           6869#
MAPH2  = 170212          6869#
MAPH20= 170302           6869#
MAPH21= 170306           6869#
MAPH22= 170312           6869#
MAPH23= 170316           6869#
```

```
MAPH24= 170320           6869#
MAPH25= 170326           6869#
MAPH26= 170332           6869#
MAPH27= 170336           6869#
MAPH3 = 170216           6869#
MAPH30= 170342           6869#
MAPH31= 170346           6869#
MAPH32= 170352           6869#
MAPH33= 170356           6869#
MAPH34= 170362           6869#
MAPH35= 170366           6869#
MAPH36= 170372           6869#
MAPH37= 170376           6869#
MAPH4 = 170222           6869#
MAPH5 = 170226           6869#
MAPH6 = 170232           6869#
MAPH7 = 170236           6869#
MAPL0 = 170200           6869#
MAPL00= 170200           6869#
MAPL01= 170204           6869#
MAPL02= 170210           6869#
MAPL03= 170214           6869#
MAPL04= 170220           6869#
MAPL05= 170224           6869#
MAPL06= 170230           6869#
MAPL07= 170234           6869#
MAPL1 = 170204           6869#
MAPL10= 170240           6869#
MAPL11= 170244           6869#
MAPL12= 170250           6869#
MAPL13= 170254           6869#
MAPL14= 170260           6869#
MAPL15= 170264           6869#
MAPL16= 170270           6869#
MAPL17= 170274           6869#
MAPL2 = 170210           6869#
MAPL20= 170300           6869#
MAPL21= 170304           6869#
MAPL22= 170310           6869#
MAPL23= 170314           6869#
MAPL24= 170320           6869#
MAPL25= 170324           6869#
MAPL26= 170330           6869#
MAPL27= 170334           6869#
MAPL3 = 170214           6869#
MAPL30= 170340           6869#
MAPL31= 170344           6869#
MAPL32= 170350           6869#
MAPL33= 170354           6869#
MAPL34= 170360           6869#
MAPL35= 170364           6869#
MAPL36= 170370           6869#
MAPL37= 170374           6869#
MAPL4 = 170220           6869#
```

```
MAPL5 = 170224          6869#
MAPL6 = 170230          6869#
MAPL7 = 170234          6869#
MASHN   006322          7716    8243#
MASHP   006322          7724    8242#
MAXIVL  002566          7331#   14223
MCMPC   006074          7708    8032#
MCMPN   006276          7712    8217#
MCMPP   006276          7720    8218#
MCVTLN  006220          7717    8158#
MCVTLP  006220          7725    8157#
MCVTNL  006232          7713    8171#
MCVTNP  006204          7715    8138#
MCVTPL  006232          7721    8170#
MCVTPN  006204          7714    8139#
MDIVP   006250          7723    8194#
MEMERR= 177744          6869#
MFPT  = 000007          7079#   13582
MINST   004202          7700#   14671
MIXDPZ  052530          13044   13173#
MIXDZP  052674          13047   13203#
MIXTYP  002456          7287#   13067   13100   13122   13174   13190   13204   13221
MLOCC   006144          7704    8081#
MMFLG   002162          7166#   11492*  12703   13591*  13610*  13617*  13669*  13783   13883   14216   14525   21300
MMHDLR  113450          21363   21402   21444   21482#
MMOVC   006074          7701    8031#
MMOVRC  006074          7702    8033#
MMOVTC  006110          7703    8052#
MMR0  = 177572          6869#   12783*  12796*  14068*  14087*  14117*  14165*  14174*  14218*  14496   14498*  14527*  21370*
                        21389*  21410*  21431*  21452*  21473*  21483*
MMR1  = 177574          6869#
MMR2  = 177576          6869#
MMR3  = 172516          6869#   13789*  13889*  13894*  13898*  13900*  21306*
MMSTAT  002214          7181#   14499*  14527
MMTCHC  006170          7709    8117#
MMULP   006250          7722    8193#
MMVEC = 000250          6869#   11343*  11344*  21363*  21364*  21402*  21403*  21444*  21445*
MMVIOL  060424          11343   14117#
MMVMSG  012116          8722#   14120
MNOLTC  040406          11443   11454#
MNOPC1  040406          11425   11434   11450   11455#
MNOPC2  040424          11428   11437   11457#
MODE    002164          7167#   12698   12727   12735   12739   12902   13770   13864*  13877*  13892   13896   13945   13950
                        13974   13998   14030   14032   14038   14042   14075   14104   14121   14144*  14146*  14148*  15770
                        15774
MOVCI = 076130          21274#  21374   21414   21456
MP0100= 000100  G       6891#
MP0140= 000140  G       6892#
MP020 = 000020  G       6889#
MP0200= 002000  G       6893#   8057    8199
MP0220= 022000  G       6896#   8073
MP0400= 004000  G       6886#   8148    8223    8249
MP0404= 004040  G       6894#   8201
MP0600= 006000  G       6885#
```

```
MPO70 = 000070  G        6890#
MPT232  017115           8812#  13643
MPT34   016761           8809#  13667
MPT44   017044           8810#  13609
MPT74   017066           8811#  13590
MSCANC  006154           7706    8096#
MSEED   002102           7142#  11382*  11580
MSKPC   006144           7705    8082#
MSPANC  006154           7707    8097#
MSUBN   006250           7711    8192#
MSUBP   006250           7719    8191#
MTCH    070500          15494   15498#
MTYPE   042176          11563*  11606*  11771#  11841   13247
NBLKS   002104           7143#  15384*  15386
NDESC   002462           7292#  11574*  11672*  13076   13083   13088   13132   13139   13152
NEGTAB  002340           7223#  12179
NEGTB1  002352           7233#  12177
NFS     054026          13410   13433#
NITE    041052          11516   11563#  13330   13367   13432
NMM     017150           8813#  13621
NMODES  002170           7170#  13593*  13611*  13634*  13668*  13861   13871
NOABO   013565           8740#  21380   21422   21464
NCCTC   042226          11776   11784#
NOER    051312          12957   12966#
NOERDS  002046           7128#  11369*  12762*  12956   14745*  14750*  14758*  14894*
NOINT   013405           8738#  11406   11455
NOLAT   013334           8737#  11457
NOMTCH  070504          15480   15499#
NONOP   046446          12548   12550   12552#
NOPROG  012212           8726#  14229
NOSCHG  062416          14415   14417#
NOTREG  001702           7066#  13703   13704   13705   13706   13707   13708   13718   13719   13720   13721   13722   13723
                        13743   13745   13747   13749   13751   13753   13764
NST     037102          11282#
NTC     041470          11659#  13244   13297   13323
NTCTS   041746          11692   11711   11715#  13096
NXFLD   002236           7190#  12569*  12589*  12618*  12656*  13520*  13521   13525   13529   13533   13544*  13545   13549
                        13553   13557
NXTC    042764          11877   11910   11933#  20336   20407*  20979   21055
NXTTC   053122          11860   11938   13045   13235   13241   13245#
N200M   001754           7099#  11273*  13413
OCNT    066742          15120*  15121*  15122   15147*  15165*  15170#  15179*  15193*
OCTIC   002302           7208#  11650*  11666   11969   14307   15534
OINST   003732           7603#  11654   14659
OMODE   066743          15150*  15159*  15171#  15182*  15187*
ONEBEY  002442           7281#  12292*  12334   12339   12354   12365   12374   12379
ONEINS  002474           7297#  11354*  11500*  11593   13354
OPENTB  025262           9620    9925#
OPEPTB  025250           9616    9914#
PACKED  051710          13039   13049#
PAT0    001720           7080#  12632   12649
PAT1    001722           7081#  12633   12650
PAT2    001724           7082#  12634   12651
PAT3    001726           7083#  12635   12652
```

```
PAT4     001730          7084#  12636   12653
PAT5     001732          7085#  12637   12654
PBIN     066746         15100   15179#
PB0      003146          7377#  14887   15041*
PB1      003147          7378#  14887
PB2      003150          7379#  14887   15042*
PB3      003151          7380#  14887
PB4      003152          7381#  14888   15043*
PB5      003153          7382#  14888
PB6      003154          7383#  14888   15044*
PB7      003155          7384#  14888
PC     =%000007          6869#   6919*   8867*   8878*   8885*   9032*   9086*   9135*   9163*   9270*   9297*   9299*   9300*
                         9336*   9360*   9367*   9376*   9415*   9457*   9466*   9472*   9487*   9489*   9516*   9518*   9519*
                         9564*   9580*   9666*   9702*   9718*   9750*   9761*   9791*   9799*   9809*   9817*   9818*   9325*
                         9826*   9828*   9834*   9852*   9862*   9882*   9982*   9995*  10001*  10005*  10025*  10046*  10049*
                        10068*  10162*  10181*  10261*  10276*  10284*  10294*  10299*  10317*  10331*  10344*  10352*  10362*
                        10367*  10388*  10399*  10409*  10415*  10459*  10484*  10502*  10514*  10533*  10548*  10559*  10583*
                        10589*  10622*  10637*  10657*  10692*  10707*  10731*  10737*  10747*  10752*  10758*  10760*  10775*
                        10781*  10782*  10788*  10789*  10802*  10804*  10805*  10808*  10822*  10835*  10869*  10886*  10898*
                        10913*  10924*  10935*  10944*  10945*  10953*  10954*  10962*  10963*  11015*  11018*  11019*  11024*
                        11036*  11045*  11054*  11062*  11076*  11086*  11098*  11105*  11125*  11139*  11163*  11308*  11322*
                        11323*  11328*  11333*  11347*  11378*  11397*  11401*  11403*  11404*  11406*  11409*  11410*  11416*
                        11417*  11424*  11426*  11433*  11436*  11442*  11444*  11445*  11449*  11455*  11457*  11458*  11460*
                        11471*  11472*  11480*  11481*  11483*  11484*  11493*  11494*  11497*  11560*  11577*  11584*  11595*
                        11596*  11597*  11657*  11659*  11695*  11698*  11702*  11705*  11709*  11712*  11730*  11739*  11782*
                        11788*  11790*  11794*  11843*  11845*  11849*  11851*  11868*  11871*  11888*  11890*  11900*  11917*
                        11920*  11926*  11944*  11945*  11978*  11980*  11983*  11987*  11995*  11996*  12006*  12018*  12021*
                        12174*  12183*  12205*  12300*  12315*  12338*  12347*  12362*  12373*  12378*  12404*  12427*  12449*
                        12455*  12458*  12462*  12466*  12501*  12505*  12506*  12511*  12512*  12516*  12520*  12534*  12553*
                        12570*  12590*  12619*  12657*  12693*  12696*  12705*  12756*  12767*  12812*  12819*  12821*  12834*
                        12842*  12849*  12850*  12854*  12855*  12858*  12859*  12862*  12865*  12869*  12877*  12970*  12980*
                        12982*  12983*  12984*  13015*  13238*  13365*  13396*  13456*  13464*  13468*  13470*  13478*  13481*
                        13483*  13492*  13495*  13497*  13504*  13507*  13509*  13515*  13523*  13527*  13531*  13535*  13538*
                        13547*  13551*  13555*  13559*  13562*  13569*  13682*  13729*  13759*  13760*  13762*  13763*  13764*
                        13770*  13771*  13844*  13866*  13879*  13901*  14047*  14074*  14075*  14098*  14103*  14104*  14120*
                        14121*  14136*  14150*  14178*  14185*  14186*  14191*  14193*  14194*  14195*  14202*  14203*  14211*
                        14226*  14228*  14229*  14242*  14244*  14245*  14246*  14247*  14255*  14260*  14266*  14268*  14269*
                        14270*  14274*  14278*  14280*  14281*  14299*  14301*  14302*  14314*  14321*  14324*  14344*  14357*
                        14381*  14417*  14446*  14474*  14501*  14504*  14508*  14510*  14511*  14512*  14524*  14544*  14560*
                        14582*  14592*  14598*  14604*  14610*  14616*  14622*  14628*  14634*  14640*  14652*  14662*  14683*
                        14693*  14711*  14716*  14718*  14720*  14741*  14761*  14767*  14768*  14769*  14775*  14781*  14786*
                        14790*  14814*  14832*  14835*  14837*  14838*  14839*  14840*  14843*  14849*  14851*  14858*  14859*
                        14863*  14864*  14868*  14869*  14875*  14882*  14884*  14885*  14887*  14888*  14898*  14938*  14939*
                        14944*  14954*  14955*  14958*  14959*  14972*  14992*  15006*  15008*  15031*  15047*  15084*  15100*
                        15108*  15134*  15140*  15168*  15196*  15232*  15268*  15271*  15274*  15278*  15281*  15284*  15288*
                        15291*  15294*  15298*  15302*  15303*  15306*  15309*  15310*  15317*  15319*  15322*  15323*  15330*
                        15332*  15335*  15336*  15337*  15350*  15351*  15364*  15365*  15389*  15406*  15412*  15417*  15419*
                        15420*  15433*  15435*  15448*  15499*  15522*  15526*  15527*  15542*  15579*  15580*  15582*  15583*
                        15585*  15586*  15588*  15589*  15591*  15592*  15594*  15595*  15597*  15598*  15600*  15601*  15603*
                        15604*  15606*  15607*  15609*  15610*  15612*  15613*  15615*  15616*  15618*  15619*  15621*  15622*
                        15624*  15625*  15627*  15628*  15630*  15631*  15633*  15634*  15636*  15638*  15640*  15641*  15643*
                        15645*  15647*  15648*  15650*  15652*  15654*  15655*  15657*  15659*  15661*  15662*  15664*  15666*
                        15668*  15669*  15671*  15673*  15675*  15676*  15678*  15680*  15682*  15683*  15685*  15687*  15689*
                        15690*  15692*  15694*  15696*  15697*  15699*  15701*  15703*  15704*  15706*  15708*  15710*  15711*
```

```
                    15713* 15715* 15717* 15718* 15720* 15722* 15724* 15725* 15727* 15729* 15731* 15732* 15734*
                    15736* 15738* 15739* 15741* 15743* 15745* 15746* 15748* 15749* 15751* 15752* 15754* 15755*
                    15764* 15765* 15768* 15781* 15789* 15791* 15793* 20033* 20039* 20046* 20053* 20063* 20074*
                    20077* 20090* 20097* 20105* 20111* 20118* 20125* 20135* 20146* 20149* 20160* 20168* 20287*
                    20298* 20315* 20334* 20353* 20365* 20378* 20390* 20405* 20568* 20576* 20579* 20650* 20660*
                    20667* 20773* 20781* 20789* 20951* 20961* 20977* 21010* 21018* 21029* 21043* 21050* 21199*
                    21250* 21264* 21372* 21380* 21384* 21412* 21422* 21426* 21454* 21464* 21468* 21505* 21513*
PCIS1    060706     13626* 13627* 14174# 14430
PCIS2    060662     13624* 13625* 14165# 14460
PCIS3    060652     14159# 14320
PCLK1P   002522      7312# 13710* 13725*
PCLK1V   002520      7311# 14209* 14318  14320* 14430* 14460*
PCLK2V   002532      7316#
PC1CK    062420     11424  11433  11449  14421#
PC1CSB   002526      7314# 14212* 14254* 14286* 14434*
PC1CSR   002524      7313# 11435* 11451* 12778* 14162* 14177* 14208* 14219* 14322* 14428  14431* 14432*
PC1CTR   002530      7315#
PC2CK    062534     11426  11436  14449#
PC2CSB   002536      7318# 14172* 14464*
PC2CSR   002534      7317# 11438* 12776* 14171* 14215* 14454  14461* 14462*
PC2CTR   002540      7319# 14170
PDEC     067040     15108  15203#
PDRTAB   113574     21366  21405  21447  21525#
PF1      054036     11788  11843  11849  11868  11888  11978  11995  12018  13441# 13569
PF2      054110     12021  13458#
PIRQ   = 177772      6869#
PIRQVE= 000240       6869#
PKPTW    002460      7291# 11572* 11671* 13049  13055  13061  13069* 13071  13075* 13078  13080* 13085  13093
                    13102* 13103* 13104  13108  13115  13124  13126* 13134  13141  13145* 13146  13157  13161*
                    13162  13166* 13167  13173* 13176  13178* 13179  13183  13192  13194* 13199  13203* 13206
                    13210* 13211  13215  13223  13225* 13230
PMASK    001770      7105# 14673* 14674  14676  14681  14690  14694
PNAME    016705      8804# 11353
POCT     066642     15084  15140  15147#
POSTAB   002364      7243# 12192
POSTB1   002376      7253# 12186
POSTB2   002410      7263# 12190
POWMON   013624      8741# 12834
PRECSK   120400     11742* 11745  12815  14210* 14319  14518  14523* 21557#
PREINS   050144     11508* 12772  12777  12780# 14915* 14920* 14933*
PRNIB    067170     14864  15266#
PRNTIQ   072530     15580  15586  15592  15598  15604  15610  15616  15622  15628  15634  15641  15648  15655
                    15662  15669  15676  15683  15690  15697  15704  15711  15718  15725  15732  15739  15746
                    15752  15760#
PROBAH   112422     13369  21300#
PROGCT   002544      7322# 12749* 14188* 14234
PROGD    002050      7129# 11582  13356  14754*
PRTSGN   002310      7211#  9475  15377* 15434*
PR0    = 000000      6869#
PR1    = 000040      6869#
PR2    = 000100      6869#
PR3    = 000140      6869#
PR4    = 000200      6869#
PR5    = 000240      6869#
```

```
PR6    = 000300          6869#
PR7    = 000340          6869#  21364
PS     = 177776          6869#
PSEED    001654          7038#  11379
PSTCSK   120602         11743*  11746  12817  21561#
PSW    = 177776          6869#  12805  14338  21406*  21421*  21448*  21463*  21475*
PTO      045266         12336#  12370
PTP      001566          7004#  11626  11632  13253  13454  13462
PTPTR    002142          7158#  11792  11847  11851  11874  11897  11989  12008  12020  12030  12036  13455*  13463*
                        13570
PTP01    001570          7006#  11609  11640
PTP02    001572          7007#
PTP03    001574          7008#
PTP04    001576          7009#
PTP05    001600          7010#
PTP06    001602          7011#
PTP07    001604          7012#
PTP10    001606          7013#
PTP11    001610          7014#
PTP12    001612          7015#
PTP13    001614          7016#  20648  20658  20771  20779
PTP14    001616          7017#  20031  20037  20103  20109  20158  20166  20566  20574  20949  20959  21007  21016
PTP15    001620          7018#
PTP16    001622          7019#
PTP17    001624          7020#
PTP20    001626          7021#  20279  20285  20296  20307  20313  20321  20331  20345  20351  20372  20376  20384
                        20388  20394  20402
PTP21    001630          7022#
PTP22    001632          7023#
PTP23    001634          7024#
PTP24    001636          7025#  11612  11646
PTQV     002216          7182#  13349  13595*  13613*  13671*
PTW1     002134          7155#  13259*  13261*  13262  13264  13274*  13275*  13276  13279*  13280*  13282*  13283  13310
PTYPLO   045426          7276   12368#
PTYPLS   045452          7278   12377#
PTYPSZ   045416          7273   12364#
PTYPTA   002422          7273#  12329
PTYPTO   045260          7275   12332#
PTYPTS   045436          7277   12372#
PTYP3P   044240         12121   12158#
PT34     002160          7165#  13672*  13786  13885  13907  14089  21304
PWRVEC=  000024          6869#  11284*  11293*  21266*
PZCODE   002476          7298#  11571*  15272  15276  15279  15282  15286  15289  15292  15295  15299  15338  15343
                        15352  15357  15637*  15644*  15651*  15658*  15665*  15672*  15679*  15686*  15693*  15700*  15707*
                        15714*  15721*  15728*  15735*  15742*
QDISP    011503          8718#  14874
QRYFLG   002210          7179#  12962*  14746*  14759*  14871
QUES     015636          8775#  14962  15027
QVHDR    016116          8786#  11523
QVMODE   002212          7180#  11276*  11291*  11520  13346  13376  13411  13415*
QVST.    037074          6900   11276#  13417
RANDOM   001764          7103#  11368*  11477*  11575  11691  11719  11904  11947  11967  12968  13030  13236  13328
                        13429*  13859  14021  15490
RANDSC   002514          7306#  14679
```

```
RANDTA  001774          7107#  12071*  12298  12313  12345  12402  12424  12444*
RANGE   065602         14882  14953#  14963
RCHAR   065600         14132*  14133*  14134  14137  14139  14141  14735*  14736*  14737  14739  14743  14748  14752
                       14756  14906*  14907  14909*  14910*  14911  14913  14918  14925  14927  14929  14931  14943
                       14946#  15007*  15030*  15512*  15513  15515*  15516*  15517  15519  15521  15525*
RDCHR = 104402         21263  21265#
RDDEC = 104404         12758  21265#
RDLIN = 104403         21262  21265#
RECCC   070640         12877  15533#
RECLAT  061650         14185  14260  14294#
REDNTC  042500         11855#  20080  20152  21053
REDTC   001424          6929#  11506*  11855*
REGCK   050674         12879  12881#
REGERR  050772         12884  12886  12888  12890  12892  12894  12897#
REGOP   047276         12551  12668#
REGSET  002056          7132#  13713*  13728*  13740  13763  15768
RESPTP  053356         13293  13299#  13318
RESR    113524         21384  21426  21468  21507#
RESVEC= 000010          6869#  11303*  11304*  11340*  11342*  13579*  13581*  13674*
RFN     054400         12570  12590  13540#
RFNITE  053442         13249  13305  13327#
RFNX    054300         12619  12657  13517#
RF1     054134         11917  12501  12842  12865  13466#  13547
RF1X    054146         12553  13468  13472#  13523
RF2     054166         11920  12506  12850  13480#  13551
RF2X    054200         13481  13485#  13527
RF3     054222         11890  11926  11980  11996  12512  12855  13494#  13555
RF3X    054234         11794  13495  13499#  13531
RF4     054252         11790  11845  11871  11900  11983  12859  13506#  13559
RF4X    054264         13507  13511#  13535
RGPR06  062102         14211  14255  14274  14349#  14524
RLL     002226          7186#  14957*  14964*  14965  14968*  15037  15039  15045*
RN      064334         12174  12183  12205  12347  12427  12449  12455  13238  13866  13879  14652  14683  14693
                       14716  14718  14775  14786  14798#
RNCON   064414         11327*  11387*  11584  14589  14595  14601*  14607  14613*  14619  14625*  14631  14637*  14801*
                       14804  14815#
RNIB    002000          7109#  12454*  12457
RPTFLG  002276          7206#  12614  12955*  14921*
RPTYPE  064266         11695  11702  11709  14774#
RP1     064416         11332*  11388*  11584  14590  14596  14602*  14608  14614*  14620  14626*  14632  14638*  14799
                       14806*  14813  14816#
RP2     064420         11337*  11389*  11584  14591  14597  14603*  14609  14615*  14621  14627*  14633  14639*  14805
                       14809  14812*  14817#
RRNGSV  063536         11944  14636#
RRNGSW  063466         11659  14624#
RRNGSX  063346         12006  14600#
RRNGSY  063416         11739  14612#
RTBLEN  001644          7034#  11906  11949
RTC     042024         11732#  12985
RTSUPV  065336         14879  14896#
RUL     002230          7187#  14965*  14967*  14969*  14970*  15037
RZTYPE  064314         11698  11705  11712  14785#  14789
R0      =%000000        6869#  6919*  8851  8858*  8859  8860  8861  8862  8863  8864*  8865  8868  8870*
                       8871*  8872  8873*  8875*  8876  8879*  8987*  8988*  8996*  8997*  9015  9017  9023*
```

```
                9024    9025*   9026*   9027*   9028*   9029*   9035*   9036*   9044*   9045*   9066    9068    9077*
                9078    9079*   9080*   9081*   9082*   9083*   9090*   9091*   9099    9119    9126*   9127    9128*
                9129*   9130*   9131*   9132*   9138*   9139*   9144    9155*   9157    9174    9184*   9185*   9193
                9205*   9206    9211*   9212*   9214    9226*   9227*   9229    9241*   9242    9243*   9244    9252*
                9253    9254*   9255    9260*   9262    9268    9303    9312    9313*   9316    9318    9334*   9344
                9370*   9371    9373*   9394*   9395    9409*   9410    9425*   9426    9427    9434    9435    9443*
                9445    9450    9460    9470    9480    9522    9531*   9554*   9555*   9561*   9567    9575*   9576*
                9577*   9598*   9599*   9604*   9611*   9612    9617*   9624*   9630*   9633*   9635*   9642*   9698*
                9714*   9743*   9754*   9778*   9779*   9780    9813*   9822*   9844*   9860*   9952*   9955*   9956
                9986*   9993    9996*   10003   10006*  10018*  10044*  10161*  10180*  10254*  10255*  10256*  10257*
               10258*  10259*  10260*  10281*  10291*  10296*  10316*  10349*  10359*  10364*  10385*  10403*  10454*
               10466*  10467   10469*  10470*  10471   10479*  10485*  10486   10498*  10510*  10529*  10543*  10555*
               10575*  10584*  10608*  10610   10613*  10652*  10686*  10701*  10727*  10733*  10777*  10784*  10832*
               10866*  11154*  11155*  11156*  11157*  11158*  11159*  11160*  11161*  11308*  11322*  11379*  11380*
               11381*  11382   11401*  11406*  11409*  11416*  11455*  11457*  11458*  11471*  11480*  11483*  11493*
               11509*  11512*  11513   11579*  11580*  11584*  11598*  11599   11607   11617   11638   11649   11696
               11699   11703   11706   11710   11713   11745*  11746   11748*  11750*  11751   11755   12175   12184
               12188   12206   12316   12348   12405   12428   12432   12436   12450*  12451   12453*  12454   12456*
               12457*  12463   12465*  12714*  12715   12755   12756*  12757*  12799   12819*  12821*  12834*  12970*
               12980*  12982*  12983*  13239*  13240   13348*  13349   13388*  13396   13583   13585   13604   13703*
               13718*  13743   13760*  13763*  13764*  13770*  13867*  13869   13873   13876*  13877   13880   13911*
               13912*  13913   13916*  13917*  13918   13921*  13922*  13923   13926*  13927*  13928   13931*  13932*
               13933   14074*  14075*  14098*  14103*  14104*  14120*  14121*  14191*  14194*  14195*  14226*  14229*
               14242*  14245*  14246*  14247*  14266*  14269*  14270*  14278*  14281*  14299*  14302*  14332   14350*
               14372*  14373*  14374   14379   14405*  14406*  14407   14413   14456*  14457*  14458   14508*  14511*
               14512*  14653*  14654*  14655   14657   14658*  14659*  14660   14685*  14690*  14691   14694*  14695
               14717   14719   14767*  14776   14778*  14780*  14787*  14788   14799*  14802*  14803*  14804*  14805*
               14806   14807*  14808*  14809*  14810*  14811*  14812   14813*  14835*  14837*  14838*  14839*  14840*
               14843*  14849*  14851*  14858*  14859*  14863*  14868*  14869*  14884*  14887*  14888*  15059   15083
               15099   15107   15127*  15128   15138   15204   15205*  15206*  15217   15219*  15230*  15306*  15308*
               15317*  15319*  15321*  15330*  15332*  15334*  15337*  15341*  15346*  15349*  15351*  15355*  15360*
               15363*  15378   15389*  15404*  15417*  15419*  15420*  15433*  15444   15445*  15446*  15447   15448*
               15449*  15492*  15493   15579*  15582*  15585*  15588*  15591*  15594*  15597*  15600*  15603*  15606*
               15609*  15612*  15615*  15618*  15621*  15624*  15627*  15630*  15633*  15636*  15640*  15643*  15647*
               15650*  15654*  15657*  15661*  15664*  15668*  15671*  15675*  15678*  15682*  15685*  15689*  15692*
               15696*  15699*  15703*  15706*  15710*  15713*  15717*  15720*  15724*  15727*  15731*  15734*  15738*
               15741*  15745*  15748*  15751*  15754*  15764*  15765*  15768*  15781*  15789*  15791*  21262*  21264*
               21265*  21266*  21340*  21341*  21342   21345*  21346*  21347   21350*  21351*  21352   21366*  21369
               21380*  21385*  21386   21405*  21409   21422*  21427*  21428   21447*  21451   21464*  21469*  21470
               21499   21507*
R1      =%000001
                6869#   6919*   8852    8874*   8875    8880*   8989*   8990*   8994    8998    9019    9037*   9038*
                9042    9046    9073    9092*   9093*   9106    9113    9117    9119*   9140*   9141*   9146    9154*
                9159    9164    9186*   9187*   9191    9204*   9213*   9214    9216    9222*   9228*   9229    9231
                9237*   9242*   9244    9246    9248*   9253*   9255    9257    9259*   9260    9263    9304    9305*
                9308*   9309    9314    9320    9335*   9345    9347*   9357    9364    9370    9374*   9394    9409
                9414*   9421*   9425    9443    9523    9524*   9528*   9529    9547    9559*   9562*   9568    9569*
                9575    9578*   9598    9611    9630    9699*   9715*   9744*   9749*   9755*   9760*   9814*   9823*
                9845*   9854*   9989*   9990*   9994   10011*  10012   10016*  10017*  10026   10031   10033*  10042*
               10043*  10047*  10159*  10179*  10282*  10292*  10297*  10314*  10350*  10360*  10365*  10384*  10404*
               10406*  10407   10455*  10480*  10482*  10499*  10511*  10530*  10544*  10546*  10551   10556*  10563*
               10567*  10568*  10571   10572*  10573*  10574   10580*  10581*  10587*  10588*  10593   10595*  10614*
               10615*  10618*  10619*  10625   10627*  10653*  10687*  10702*  10728*  10734*  10778*  10785*  10833*
               10868*  11147*  11148   11151   11166*  11170*  11174*  11178*  11183*  11188*  11189   11192   11195
               11199*  11200   11201   11202*  11203   11204   11209*  11210   11213   11216   11222*  11226*  11230*
```

```
11234* 11238* 11242* 11243  11246  11249  11252  11256* 11257  11258  11259* 11260  11261
11262* 11263  11264  11510* 11513  11599* 11600* 11601* 11602* 11603  11607* 11608* 11610
11611* 11617* 11618* 11619* 11620  11621* 11622  11627* 11628  11633* 11634  11638* 11639*
11641  11649* 11650  11651  11653* 11654* 11655  11656  11666* 11667* 11668* 11669* 11670
11673  11674* 11675* 11676  11677* 11678* 11679* 11680* 11681* 11682  11683* 11684* 11685*
11686* 11687  11688* 11689* 11690  11751* 11752* 11753* 11754  11755* 11756* 11757* 11758
11761* 11762* 11763* 11764* 11765* 11766* 11767* 11768* 11769* 11770  11792* 11793  11795
11798  11810  11822  11847* 11873* 11874* 11876  11892* 11895* 11898  11902  11919* 11922
11925* 11928  11930* 11953* 11955* 11956* 11957* 11958* 11960  11982  11986  11997  12001
12005  12013* 12014* 12015  12044* 12045  12046  12047* 12048  12052* 12053  12054* 12056*
12057  12059  12061  12063  12065  12067  12079* 12082* 12089* 12092* 12099* 12107* 12123*
12124* 12125* 12126* 12127* 12128* 12129* 12130  12146* 12148* 12160* 12167* 12181* 12196*
12197* 12203* 12208* 12210* 12214* 12216* 12225* 12230* 12231* 12232* 12233* 12234* 12235*
12236* 12237  12240* 12241* 12242* 12243* 12244* 12245* 12247  12248  12251* 12260* 12262*
12267* 12271* 12280* 12281* 12282* 12283* 12284* 12285* 12286* 12287  12290* 12291* 12292
12316* 12318* 12334* 12335* 12336* 12337  12339* 12354* 12355* 12356* 12357* 12358* 12359*
12360* 12361  12365* 12369* 12374* 12379* 12382* 12383* 12384* 12385* 12386* 12387* 12388*
12389  12393* 12394* 12399* 12405* 12407* 12418* 12419* 12420* 12421* 12426* 12430* 12434*
12438* 12440* 12476* 12478  12479  12503  12508  12514  12529* 12530* 12532* 12533* 12554*
12557  12562  12565* 12571  12574  12591  12593  12599  12600  12601* 12602  12603  12605
12606  12607* 12608  12609  12620  12622  12624* 12625  12626* 12627  12658  12660  12661*
12663* 12686* 12687* 12688  12690  12716* 12717  12800  12844  12852  12856  12860  12867
12900* 12914* 12921  12923  12927* 12929  12934* 12936  12939* 12941  12943  13003* 13004*
13005* 13011* 13012* 13013* 13022* 13023* 13024  13026  13104* 13105* 13106  13108* 13109*
13110* 13111* 13112* 13113  13115* 13116* 13117* 13118* 13119* 13120  13134* 13135* 13136
13141* 13142* 13143  13146* 13147* 13148  13157* 13158* 13159  13162* 13163* 13164  13167*
13168* 13169  13179* 13180* 13181  13183* 13184* 13185* 13186* 13187* 13188  13206* 13207*
13208  13211* 13212* 13213  13215* 13216* 13217* 13218* 13219* 13220  13254* 13255* 13256*
13257  13259  13266  13274  13290  13300  13312  13331* 13352  13358* 13359* 13360* 13361
13444* 13445  13447* 13449* 13450* 13451* 13452* 13453* 13454* 13455  13459* 13460* 13461*
13462* 13463  13469* 13473* 13474* 13475* 13476* 13477* 13482* 13486* 13487* 13488* 13489*
13490* 13491* 13496* 13500* 13501* 13502* 13503* 13508* 13512* 13513* 13514* 13537* 13561*
13704* 13719* 13745  13764  14307* 14308* 14309* 14310  14313* 14333  14351* 14377* 14378
14379  14410* 14411  14413  14422* 14423  14424* 14425  14426* 14443* 14444* 14445* 14449*
14450  14451* 14452  14453* 14471* 14472* 14473* 14566* 14567  14568* 14569  14570* 14579*
14580* 14581* 14669* 14670* 14671* 14672* 14673  14844* 14846  14848  14852  14854* 15039*
15040  15041  15042  15043  15044  15058  15059* 15060  15081  15086  15097  15102  15110
15113  15115  15120  15133* 15136  15203  15210* 15211  15215  15231* 15307* 15311* 15312*
15313  15315  15320* 15324* 15325* 15326  15328  15333* 15340* 15345* 15348* 15354* 15359*
15362* 15380  15383  15384  15392  15396* 15405* 15409* 15410  15478* 15479  15481  15483*
15485  15488  15492  15495  15509* 15521* 15523  15534* 15535* 15536* 15538* 15541* 20029*
20030* 20031* 20032  20035* 20036* 20037* 20038  20043* 20044* 20045  20050* 20051* 20052
20055* 20058* 20059  20061* 20062  20067* 20072* 20073  20084* 20087* 20088* 20089  20092*
20095* 20096  20101* 20102* 20103* 20104  20107* 20108* 20109* 20110  20115* 20116* 20117
20122* 20123* 20124  20127* 20130* 20131  20133* 20134  20139* 20144* 20145  20156* 20157*
20158* 20159  20164* 20165* 20166* 20167  20275* 20276* 20277* 20278* 20279* 20280  20281*
20282* 20283* 20284* 20285* 20286  20292* 20293* 20294* 20295* 20296* 20297  20303* 20304*
20305* 20306* 20307* 20308  20309* 20310* 20311* 20312* 20313* 20314  20317* 20318* 20319*
20320* 20321* 20322  20323* 20324* 20327* 20328* 20329  20330* 20331* 20332  20341* 20342*
20343* 20344* 20345* 20346  20347* 20348* 20349* 20350* 20351* 20352  20355* 20356* 20357*
20358* 20359  20360* 20361* 20362* 20363* 20364  20370* 20371* 20372* 20373  20374* 20375*
20376* 20377  20382* 20383* 20384* 20385  20386* 20387* 20388* 20389  20392* 20393* 20394*
20395  20396* 20397* 20399* 20400  20401* 20402* 20403  20564* 20565* 20566* 20567  20572*
20573* 20574* 20575  20644* 20645* 20646* 20647* 20648* 20649  20654* 20655* 20656* 20657*
```

```
                    20658*  20659   20662*  20663*  20664*  20665*  20666   20769*  20770*  20771*  20772   20777*  20778*
                    20779*  20780   20783*  20784*  20785   20945*  20946*  20947*  20948*  20949*  20950   20955*  20956*
                    20957*  20958*  20959*  20960   20970*  20971*  20974*  20975*  20976   21003*  21005*  21007*  21008
                    21014*  21015*  21016*  21017   21026*  21027*  21028   21035*  21038*  21039   21041*  21042   21190*
                    21191*  21192*  21193   21194*  21195   21196*  21197   21262*  21266*  21365*  21404*  21446*  21486
                    21500   21508*
R10     =%000000     6869#
R11     =%000001     6869#
R12     =%000002     6869#
R13     =%000003     6869#
R14     =%000004     6869#
R15     =%000005     6869#
R2      =%000002     6869#   8853    8881*   8994*   8998*   9003*   9004*   9010    9014    9019    9021*   9042*   9046*
                     9051*   9052*   9058    9065    9073    9075*   9097*   9101*   9106*   9107*   9109    9112    9117
                     9122    9142*   9144    9148    9150    9153*   9155    9158    9174    9176    9178    9180*   9188*
                     9190    9193    9195    9200*   9202*   9205    9219*   9220    9234*   9235    9261*   9262*   9263*
                     9264*   9265*   9266*   9267*   9316*   9318*   9319    9322*   9326    9328    9333*   9337*   9338*
                     9339*   9340*   9371*   9372*   9395*   9396    9397*   9398    9401*   9405*   9416*   9445*   9446
                     9447*   9448    9450*   9451    9456*   9458    9460*   9461    9464*   9465*   9467    9470*   9471*
                     9473    9480*   9481*   9482    9485*   9486*   9525    9532*   9537*   9542*   9544*   9545    9563*
                     9570    9571*   9572*   9576    9579*   9595*   9597*   9600*   9601*   9602*   9603*   9604    9612*
                     9613*   9616*   9617    9620*   9751    9762    9792    9800    9846*   9847    9874*   9875*   9876*
                     9877*   9878*   9879*   9880*   9953*   9959    9963*   9966    9973*   9974*   9979*   10019*  10022*
                    10023   10045*  10061*  10062*  10063*  10064*  10065*  10066*  10067*  10183   10210   10277*  10288
                    10324*  10325*  10326*  10327*  10328*  10329*  10330*  10345*  10356   10392*  10393*  10394*  10395*
                    10396*  10397*  10398*  10411   10457*  10486*  10487   10503*  10504   10506*  10515*  10549   10590
                    10623   10630*  10631*  10632*  10633*  10634*  10635*  10636*  10654*  10659   10693   10708   10732
                    10738   10768*  10769*  10770*  10771*  10772*  10773*  10774*  10870   10872*  10873   10876   10917*
                    10920*  10921*  10922*  10923*  11148*  11149   11150   11151*  11152   11153   11189*  11190   11191
                    11192*  11193   11194   11210*  11211   11212   11213*  11214   11215   11216*  11217   11218   11243*
                    11244   11245   11246*  11247   11248   11249*  11250   11251   11507*  11511*  11512   11609*  11610*
                    11612   11640*  11641*  11642   11644*  11645*  11646   11793*  11808*  11820*  11832*  11897*  11898*
                    11902*  11906   11908   11954*  11957   11958   12140*  12141*  12142   12152*  12153*  12154*  12155
                    12177*  12179*  12180*  12181   12186*  12190*  12192*  12327*  12328*  12329*  12330   12477*  12478*
                    12555*  12557*  12558*  12559   12560*  12564*  12566*  12574*  12575*  12577*  12579   12580*  12581
                    12583*  12587*  12599*  12602*  12605*  12608*  12610*  12660*  12662*  12663   12718*  12719   12801
                    12901*  12915*  12923   12928*  12931   12933*  12936   12940*  12942   12944   13266*  13267*  13268
                    13278*  13286*  13290*  13291*  13292   13312*  13313   13317   13705*  13720*  13747   13764   14334
                    14352*  14376*  14378*  14409*  14411   14668*  14679*  14691*  14695*  14697*  14698   14845*  14846
                    15057   15060*  15061   15063   15065   15067   15069   15071   15073   15075   15077   15081*  15082*
                    15086*  15087   15089   15091   15097*  15098*  15102*  15103*  15104   15106*  15110*  15112*  15117*
                    15118*  15119*  15122*  15125*  15132*  15136*  15137*  15148*  15149*  15150   15180*  15181*  15182
                    15206   15209*  15213*  15216*  15221   15226*  15385*  15386*  15388*  15390*  15400*  15421*  15422*
                    15423*  15424*  15425*  15426*  15429*  15430*  15446   20056*  20057*  20058   20068*  20069*  20070
                    20072   20085*  20086*  20087   20093*  20094*  20095   20128*  20129*  20130   20140*  20141*  20142
                    20144   20325*  20326*  20327   20398*  20399   20972*  20973*  20974   21036*  21037*  21038   21189*
                    21190   21193*  21195*  21197*  21236*  21237*  21238*  21239   21240*  21241   21244*  21245   21262*
                    21266*  21501   21509*
R3      =%000003     6869#   8854    8882*   8999*   9000*   9001    9008*   9012    9014*   9017*   9047*   9048*   9049
                     9056*   9060    9065*   9071*   9102*   9103*   9104    9111*   9115    9121*   9122    9124*   9143*
                     9146    9148    9150    9152*   9154    9160    9164    9168    9170    9172*   9189*   9191    9195
                     9197*   9203*   9729*   9732*   9735    9736    9782*   9833*   9838*   9841*   9846    9954*   9962*
                     9964    9971*   9980*   10151*  10186*  10189   10193*  10198*  10204*  10207*  10212*  10218   10223
                    10234   10240*  10245*  10246   10257   10436*  10437*  10465*  10467*  10468*  10471*  10472   10475
```

```
                    10477   10480   10496   10499   10518*  10574*  10586   10588   10680*  10681*  10684   10687   10688
                    10695*  10696   10699   10725*  10728   10741*  10742   12561*  12564   12567*  12588*  12600*  12603*
                    12606*  12609*  12611*  12617*  12625*  12627*  12628*  12720*  12721   12802   13252*  13253*  13292
                    13295*  13300*  13301*  13317   13319   13322*  13706*  13721*  13749   13764   14335   14353*  15056
                    15083*  15099*  15107*  15131*  15138*  15139*  15152*  15154*  15155*  15156*  15157   15184*  15211*
                    15215*  15226   15378*  15404   21263*  21266*  21502   21510*
R4      =%000004     6869#   8855    8883*   9009*   9010    9012*   9057*   9058    9063*   9112*   9113    9115*   9156*
                     9157*   9158*   9159*   9160*   9161*   9162*   9190*   9198*   9200    9202    9733*   9735*   9737
                     9741    9744    9766*   9987*   9988*   9989    9990    9991*   9992    9997*   10010*  10012*  10020
                    10022   10024*  10152*  10185*  10190   10192*  10197*  10201*  10210*  10221   10232   10241*  10243*
                    10258   10440*  10442*  10443*  10444*  10445   10446*  10452   10455   10460*  10494   10511   10519*
                    10566*  10570*  10571*  10575   10609*  10610*  10612*  10625   10650   10653   10662*  10682*  10683*
                    10685   10702   10703   10710*  10711   10714   10726*  10734   10745*  11801*  11802*  11803*  11804*
                    11805*  11806*  11807*  11808   11813*  11814*  11815*  11816*  11817*  11818*  11819*  11820   11825*
                    11826*  11827*  11828*  11829*  11830*  11831*  11832   12722*  12723   12803   13276*  13277*  13286
                    13295   13310*  13311*  13315*  13319*  13320   13322   13707*  13722*  13751   13764   14336   14354*
                    15055   15130*  15151*  15157*  15158*  15161*  15162*  15163   15183*  15185*  15186*  15189*  15190*
                    15191   15207*  15210   15222   15223   21266*  21503   21511*
R5      =%000005     6869#   8856    8884*   9734*   9736*   9752    9755    9767*   10447*  10449   10461*  10698*  10699*
                    10700   10713*  10714*  10715   10759*  10761   11988*  12007*  12029*  12035*  12044   12047   12052
                    12467*  12724*  12725   12804   13708*  13723*  13753   13764   14337   14355*  15054   15129*  15208*
                    15221*  15228*  15401*  15407*  15427*  15431*  15445   15450*  21266*  21504   21512*
R6      =%000006     6869#
R7      =%000007     6869#
SAVKCC  120604      12794*  12797   21562#
SAVPTR  002500       7299#  12000*  12003*  12010
SAVR    113472      21372   21412   21454   21499#
SAVSA   002124       7151#  12104*  12112   12293*  12323   12397*  12412
SAVSGL  002126       7152#  12391*  12410   12419
SAVSGN  025234       9777*   9855    9908#
SAVSL   002122       7150#  12103*  12111   12257*  12258*  12294*  12322   12396*  12411
SAVSRF  002502       7300#  11966*  11993   13448*
SAVST   062134      14202   14363#
SBR     001762       7102#  12559*  12573*  12577
SCSTK   003010       7342#  14376   14409
SDASH   016663       8802#  12982
SDPAR0= 172260       6869#  13808*
SDPAR1= 172262       6869#  13809*
SDPAR2= 172264       6869#  13810*
SDPAR3= 172266       6869#  13811*
SDPAR4= 172270       6869#  13812*
SDPAR5= 172272       6869#  13813*
SDPAR6= 172274       6869#  13814*
SDPAR7= 172276       6869#  13815*
SDPDR0= 172220       6869#
SDPDR1= 172222       6869#  14044*
SDPDR2= 172224       6869#
SDPDR3= 172226       6869#
SDPDR4= 172230       6869#
SDPDR5= 172232       6869#  13992*
SDPDR6= 172234       6869#
SDPDR7= 172236       6869#  13913
SEEDST  037056       6901   11270#
SELMD   056446      12696   13856#
```

```
SELREG  055252          12693   13693#
SEODD   035240          10861*  10863   11008#
SETPAR  055760          11378   13782#
SETPDR  056672          12705   13906#
SFCI    070404          11497   15478#
SGNBYT  025274           9319*   9389*   9396*   9410*   9426*   9434*   9446*   9935#  15421   15429
SGPR0   003010           7344#  14332*  14350   14365   14392
SGPR06  062024          14178   14331#  14501
SGPR1   003012           7345#  14333*  14351   14366   14395
SGPR2   003014           7346#  14334*  14352   14367   14397
SGPR3   003016           7347#  14335*  14353   14368   14399
SGPR4   003020           7348#  14336*  14354   14369   14401
SGPR5   003022           7349#  14337*  14355   14370   14403
SGPR6   003024           7350#  14341*  14343*  14371   14372   14390   14405
SIGN    002130           7153#  12132*  12133*  12163*  12164*  12165*  12166*  12167   12172   12201   12239*  12255*  12270*
                        12271   12302*  12303*  12304*  12305*  12306*  12307*  12350*  12352*  12361*
SIPAR0= 172240           6869#  13651   13799*  21318*
SIPAR1= 172242           6869#  13800*  21319*
SIPAR2= 172244           6869#  13801*  21320*
SIPAR3= 172246           6869#  13802*  21321*
SIPAR4= 172250           6869#  13803*  21322*
SIPAR5= 172252           6869#  13804*  21323*
SIPAR6= 172254           6869#  13805*  21324*
SIPAR7= 172256           6869#  13806*  21325*
SIPDR0= 172200           6869#  13911   21345
SIPDR1= 172202           6869#  14034*
SIPDR2= 172204           6869#  13976*  21409*  21432*
SIPDR3= 172206           6869#
SIPDR4= 172210           6869#
SIPDR5= 172212           6869#  13985*
SIPDR6= 172214           6869#
SIPDR7= 172216           6869#  21347
SIZEHI= 177762           6869#
SIZELO= 177760           6869#
SIZEPT  054520          11347   13578#
SL      = 000057         7077#   8777
SLCRLF  015655           8777#  15000
SMTSTS  113104          21391   21400#
SN      067410          15278   15288   15306#
SP      =%000006         6869#   6919*   8858    8863*  11284*  11293*  11308*  11318   11319   11322*  11327   11332   11337
                        11401*  11406*  11409*  11416*  11455*  11457*  11458*  11471*  11480*  11483*  11493*  11584*  12675
                        12678*  12683*  12684   12726   12743*  12745*  12755*  12756*  12757   12759   12807   12808   12810
                        12811*  12819*  12821*  12834*  12970*  12980*  12982*  12983*  13645   13646   13656   13657   13659
                        13660   13662   13663   13680   13760*  13763*  13764*  13770*  14070   14072   14074*  14075*  14078
                        14079   14080   14092   14096   14098*  14101   14103*  14104*  14108   14109   14110   14118   14120*
                        14121*  14149*  14179   14181   14189   14191*  14194*  14195*  14226*  14229*  14239   14242*  14245*
                        14246*  14247*  14250*  14256   14257   14263   14266*  14269*  14270*  14275   14278*  14281*  14285*
                        14299*  14302*  14340   14341   14343   14364   14388   14416*  14423*  14425*  14439*  14441   14442
                        14444   14445   14450*  14452*  14467*  14469   14470   14472   14473   14496*  14499   14502   14506
                        14508*  14511*  14512*  14542   14543   14558   14559   14567*  14569*  14575*  14577   14578   14580
                        14581   14760*  14767*  14835*  14837*  14838*  14839*  14840*  14843*  14849*  14851*  14858*  14859*
                        14863*  14868*  14869*  14884*  14887*  14888*  14896*  14897*  14935*  14936*  14937*  14957   14964
                        14967   14971*  14978*  14981*  14982*  14983   14985   14987   14991*  14993   14995   14997   15001*
                        15002*  15003*  15004*  15005*  15007   15010   15012   15014*  15015*  15016*  15017*  15018*  15021*
```

```
                    15022* 15023  15028* 15030  15032* 15046* 15127  15128* 15203* 15204* 15230  15231  15306*
                    15317* 15319* 15330* 15332* 15337* 15351* 15389* 15417* 15419* 15420* 15433* 15444* 15448*
                    15449  15498* 15579* 15582* 15585* 15588* 15591* 15594* 15597* 15600* 15603* 15606* 15609*
                    15612* 15615* 15618* 15621* 15624* 15627* 15630* 15633* 15636* 15640* 15643* 15647* 15650*
                    15654* 15657* 15661* 15664* 15668* 15671* 15675* 15678* 15682* 15685* 15689* 15692* 15696*
                    15699* 15703* 15706* 15710* 15713* 15717* 15720* 15724* 15727* 15731* 15734* 15738* 15741*
                    15745* 15748* 15751* 15754* 15764* 15765* 15768* 15769* 15781* 15789* 15791* 20079* 20151*
                    20335* 20406* 20978* 21052* 21054* 21262* 21263* 21264* 21265* 21266* 21307  21367* 21380*
                    21407* 21422* 21449* 21464* 21476* 21484  21485
SPCV      002042     7126# 14209  14318*
SPHAND    002144     7159# 11740* 11866  11886  11976  12049  12898  13028  13570* 15269
SRC.PT    113462    21375  21415  21457  21492#
SRNGST    063276    11577  14587#
SRNGSV    063512    11945  14630#
SRNGSW    063442    11657  14618#
SRNGSX    063322    11987  14594#
SRNGSY    063372    11730  14606#
SR0     = 177572     6869#
SR1     = 177574     6869#
SR2     = 177576     6869#
SR3     = 172516     6869#
SSP     = 000006     6869#
SSTG1     003250     7401# 20535
SSTG10    003350     7444# 21126
SSTG11    003356     7448# 21146
SSTG12    003370     7454# 20413  20699  20709  20752  20985
SSTG13    003450     7481# 20827  20838  20851
SSTG14    003610     7532# 20714
SSTG15    003616     7536# 20717
SSTG16    003624     7540# 20722
SSTG2     003254     7391   7406# 21120
SSTG2A    003262     7410# 21128
SSTG2B    003270     7414# 21130
SSTG3     003276     7418# 21140
SSTG4     003310     7424# 21122
SSTG5     003316     7428# 21142
SSTG6     003330     7434# 21124
SSTG7     003336     7438# 21144
STACK   = 001100     6869# 11284  11293
START     037066     6897  11273# 12991  13405
STATCG    062252    14186  14387# 14504
STATPS    002570     7333# 12746* 14364* 14388
STATR0    002572     7334# 12715* 14365* 14392
STATR1    002574     7335# 12717* 14366* 14395
STATR2    002576     7336# 12719* 14367* 14397
STATR3    002600     7337# 12721* 14368* 14399
STATR4    002602     7338# 12723* 14369* 14401
STATR5    002604     7339# 12725* 14370* 14403
STATR6    002606     7340# 12726* 12729* 12743  14371* 14390
STGAD     002120     7149# 12053* 12079  12089  12099  12146  12196  12214  12225  12251  12290  12369  12394
                    12421
STGDIG    002312     7212# 12142* 12180  12337*
STGDS1    002112     7146# 12045* 12054  12055* 12082  12093  12101  12103  12109* 12111* 12120  12132  12134*
                    12135* 12136* 12137* 12138* 12140  12148  12239  12240  12246* 12247* 12262  12289* 12294
```

```
                    12295   12320*  12322*  12324   12395*  12396   12398   12409*  12411*  12413
STGDS2  002114       7147#  12046*  12092   12093*  12104   12107   12108*  12112*  12248*  12260   12293   12295*  12297*
                    12302   12318   12319*  12323*  12324*  12397   12398*  12407   12408*  12412*  12413*
STGLN   002116       7148#  12048*  12051*  12078*  12080   12084*  12090   12094*  12105   12114*  12123   12131*  12143
                    12149*  12150   12230   12238*  12253   12257   12263*  12264*  12265   12280   12288*  12291   12308
                    12311   12325*  12382   12390*  12391   12392*  12393   12400   12414*
STGTYP  002314       7213#  12130*  12152   12220   12223   12237*  12268   12287*  12327   12340   12389*  12422
STG12B  003410       7463#  20755
STG12C  003430       7472#  20758
STG13B  003510       7498#  20856
STG13C  003550       7515#  20859
STHASC  062412      14389   14391   14394   14396   14398   14400   14402   14404   14412   14416#
STKLMT= 177774       6869#
STKM1   011623       8719#  12821
STKM2   011714       8720#  12819
STK1    113572      21307*  21476   21522#
STOPLA  002564       7330#  14295   14297
STOPT   002224       7185#  12759*  12760
STOPTF  002222       7184#  11365*  12752   12754*  14890   14892*
STRNC   002002       7110#  12970   14589*
STRP1   002004       7111#  12970   14590*
STRP2   002006       7112#  12970   14591*
SUHRET  050226      12798#  14081   14111
SUPSTK= 000700       6869#
SURADR  002054       7131#  12028*  12032   12038
SURLEN  002052       7130#  12020*  12031   12034   12037
SVCINS= 000000       6750#  11308   11322   11401   11406   11409   11416   11455   11457   11458   11471   11480   11483
                    11493   11584   12756   12819   12821   12834   12970   12980   12982   12983   13760   13763   13764
                    13770   14074   14075   14098   14103   14104   14120   14121   14191   14194   14195   14226   14229
                    14242   14245   14246   14247   14266   14269   14270   14278   14281   14299   14302   14508   14511
                    14512   14767   14835   14837   14838   14839   14840   14843   14849   14851   14858   14859   14863
                    14868   14869   14884   14887   14888   15306   15317   15319   15330   15332   15337   15351   15389
                    15417   15419   15420   15433   15448   15579   15582   15585   15588   15591   15594   15597   15600
                    15603   15606   15609   15612   15615   15618   15621   15624   15627   15630   15633   15636   15640
                    15643   15647   15650   15654   15657   15661   15664   15668   15671   15675   15678   15682   15685
                    15689   15692   15696   15699   15703   15706   15710   15713   15717   15720   15724   15727   15731
                    15734   15738   15741   15745   15748   15751   15754   15764   15765   15768   15781   15789   15791
                    21380   21422   21464
SVRNC   002032       7122#  14631*  14637
SVRP1   002034       7123#  14632*  14638
SVRP2   002036       7124#  14633*  14639
SVR0    113556      21499*  21507   21515#
SVR1    113560      21500*  21508   21516#
SVR2    113562      21501*  21509   21517#
SVR3    113564      21502*  21510   21518#
SVR4    113566      21503*  21511   21519#
SVR5    113570      21504*  21512   21520#
SWNG    013460       8739#  11308
SWOPC   051560      12958   12986   13021#
SWR     001736       7087#  11284*  11293*  12750   21266*
SWREG   000176       6897#  11284   11293
SWRNC   002024       7119#  14619*  14625
SWRP1   002026       7120#  14620*  14626
SWRP2   002030       7121#  14621*  14627
```

```
SW0     = 000001          6869#
SW00    = 000001          6869#
SW01    = 000002          6869#
SW02    = 000004          6869#
SW03    = 000010          6869#
SW04    = 000020          6869#
SW05    = 000040          6869#
SW06    = 000100          6869#
SW07    = 000200          6869#
SW08    = 000400          6869#
SW09    = 001000          6869#
SW1     = 000002          6869#
SW10    = 002000          6869#
SW11    = 004000          6869#
SW12    = 010000          6869#
SW13    = 020000          6869#
SW14    = 040000          6869#
SW15    = 100000          6869#
SW2     = 000004          6869#
SW3     = 000010          6869#
SW4     = 000020          6869#
SW5     = 000040          6869#
SW6     = 000100          6869#
SW7     = 000200          6869#
SW8     = 000400          6869#
SW9     = 001000          6869#
SXRNC     002010          7113#  14595*  14601
SXRP1     002012          7114#  14596*  14602
SXRP2     002014          7115#  14597*  14603
SYRNC     002016          7116#  14607*  14613
SYRP1     002020          7117#  14608*  14614
SYRP2     002022          7118#  14609*  14615
SYSTID=   177764          6869#
S1N       067440         15281   15291   15311#
S1TYPE    002446          7283#  11676*  11693   11696*  11699*  11801   13051*  13053*  13106*  13127*  13181*  13195*  13213*
                         13226*  21020   21031   21045
S2N       067530         15284   15294   15324#
S2TYPE    002450          7284#  11682*  11700   11703*  11706*  11813   13057*  13059*  13113*  13128*  13188*  13196*  13220*
                         13227*  21022   21033   21047
S3TYPE    002452          7285#  11687*  11707   11710*  11713*  11825   13063*  13065*  13120*  13129*
TBADR     001640          7032#  11919   11925   11930   11946   11953   11954   12476   12532   12561   12587   12900   12927
                         13005   21188   21189   21203   21209   21214   21220   21225   21231   21236
TBEND     001760          7101#  11946*  11949*  11952*  11960   12479   12921   12929
TBITVE=   000014          6869#
TBLEN     001642          7033#  11908   11952   21191   21237
TCC       003652          7557#  12685*  12692*  12731*  12734   14838
TCCR      003672          7572#  12797*  12798*  12875*  12878   14078*  14108*  14859   14863
TDIG      066744         15091*  15092   15094*  15095   15123*  15124   15163*  15164   15172#  15191*  15192   15772*  15776*
                         15778*  15780   15784*  15786*  15788
TEMP      017466          8901#   9060*   9061*   9062*   9063    9068*   9069*   9070*   9071    9216*   9217*   9218*   9219
                          9231*   9232*   9233*   9234    9545*   9549*   9550*   9551*   9552*   9555    9558*   10189*  10207
TEMPE     025240          9747*   9748*   9749    9758*   9759*   9760    9910#
TEMP1     025216          9901#  10190*  10201
TERR      002274          7205#  14848*  14849
```

```
TEROR    002256          7198#  12642*  12662
TER1R    002260          7199#  12643*
TER2R    002262          7200#  12644*
TER3R    002264          7201#  12645*
TER4R    002266          7202#  12646*
TER5R    002270          7203#  12647*
TER6R    002272          7204#
TE0      025242          9686*   9816    9911#
TE2      025244          9687*   9824    9912#
TE4      025246          9688*   9851    9854    9856    9871    9879    9913#
TFORE    051206         12899   12922   12930   12945#
TFS      044472         12144   12219#  12310
TIMOUT   002542          7320#  14422   14443   14449   14471   14566   14579
TINRET   050202         12695*  12700*  12786   12792#  14070   14092
TINST    050164         11199   11202   11256   11259   11262   11559*  11656*  11784   11839   11864   11884   11915   11942
                        12472   12486   12545   12547   12549   12564*  12574*  12577*  12578   12583*  12595   12597   12668*
                        12669*  12670*  12671*  12672*  12673*  12676   12680   12686   12785#  12847   12910   12912   13007
                        13022   13036   13234   13242*  13245*  13363*  13770   14024   14026   14075   14096   14104   14121
                        14179   14261   14502   14833   15311   15324   15745   15751   15760   21187*  21198   21202*  21207*
                        21208*  21213*  21218*  21219*  21224*  21229*  21230*  21235*  21239*  21241*  21242   21245*  21246*
                        21247*  21248*  21249   21251*  21252*
TKB      001712          7072#  14132   14735   14906   14981   15021   15512
TKS      001666          7060#  14130   14733   14904   14979   15019   15510
TKVEC =  000060          6869#
TL1C     103726         15899   16019   16131   16260   16381   16504   16614   16746   16868   19987#
TL2C     103746         15901   16133   16262   16383   16616   19997#
TL21C    106114         16172   20473#
TL22C    106132         16174   20482#
TNXP     053364         13258   13263   13265   13302#
TOFMM    050212         12710*  12713*  12795#
TOLTC    050072         11355*  12751   12761   12764#  12908   14573*
TOMM     050146         12709*  12712*  12782#
TOPC1    050134         11359*  12775   12777#  12905   14437*
TOPC2    050124         11358*  12764   12773#  14258   14465*
TOTTC    001420          6927#  11503*  11579   11725*  11729   11856   11859*  11934   11937*  12760   13372*  13696   13770
                        14075   14094   14104   14121   15765
TOTTCH   001416          6926#  11504*  11727*  11858*  11936*  13373*  13770   14075   14104   14121   15765
TPB      001716          7074#  14943*
TPERP    001652          7037#  11721
TPRECS   002044          7127#  14210   14319*  14518*  14523
TPS      001714          7073#  14941
TPSW     001664          7059#  11302*  12732   12742*  12744*  12784*  12794   13700*  13709*  13715*  13724*  13742*  13756*
                        13758*
TPVEC =  000064          6869#
TP19     106754         17034   17447   17812   17815   18286   18289   18711   18714   19016   19396   19399   19436   19439
                        19735   19738   20707#
TP19A    106764         17482   20712#
TP19B    107002         19517   19520   20720#
TP19C    107012         19476   20725#
TP19D    107024         19479   20731#
TP19E    107032         19815   19818   20735#
TP99     107040         19055   20739#
TRA      002106          7144#  11986*  11991   12027   12033
TRAPVE=  000034          6869#  11284*  11293*
```

```
TRAP10  012154          8724#  14103
TRAP4   012136          8723#  14074
TRL     002110          7145#  11982*  11990   11997*  12009   12023*  12026*  12027*  12028   12033*  12034*
TRN     003634          7549#  11922   11928   12503   12508   12514   12529   12571   12591   12844   12852   12856   12860
                       12867   13003   13469   13482   13496   13508   13561
TRNR    003654          7561#  13004   13011
TRPINF  012310          8728#  13770   14075   14104   14121
TRPLOC  002172          7172#  14072   14073*  14075   14101*  14102*  14104   14118*  14119*  14121
TRTVEC= 000014          6869#
TRO     003634          7550#  12490   12539   12632*  12714   12972*  20030   20041   20044   20055   20065   20084   20108
                       20120   20123   20128   20140   20165   20275   20303   20317   20341   20355   20370   20382   20392
                       20564   20572   20644   20654   20662   20769   20777   20783   20786   20945   20955   20963   20970
                       21003   21014   21024   21026   21035   21188*
TROR    003654          7562#  12799*  12883   14844
TR1     003636          7551#  12491   12540   12633*  12716   12973*  20029   20035   20043   20050   20061   20067   20076
                       20088   20092   20104*  20110*  20117*  20124*  20134*  20145*  20148*  20159*  20164   20278   20291
                       20306   20320   20344   20358   20371   20383   20393   20565   20573   20578   20647   20657   20665
                       20770   20778   20784   20948   20958   20975   21005   21015   21027   21041   21049   21203*
TR1R    003656          7563#  12800*  12885
TR2     003640          7552#  12492   12541   12634*  12718   12974*  20036   20048   20051   20056   20068   20085   20093
                       20102   20113   20116   20127   20137   20157   20281   20292   20309   20323   20347   20360   20374
                       20386   20396   20965   20968   20972   21036   21209*
TR2R    003660          7564#  12801*  12887
TR3     003642          7553#  12493   12542   12593   12635*  12720   12975*  20032*  20038*  20045*  20052*  20062*  20073*
                       20076*  20089*  20096*  20101   20107   20115   20122   20133   20139   20148   20156   20167*  20280*
                       20284   20291*  20295   20308*  20312   20322*  20328   20330   20346*  20350   20359*  20363   20373*
                       20375   20385*  20387   20395*  20397   20401   20649*  20659*  20666*  20772*  20780*  20785*  20788*
                       20950*  20960*  20976*  21008*  21017*  21028*  21042*  21049*  21214*
TR3R    003662          7565#  12802*  12889
TR4     003644          7554#  12494   12543   12636*  12722   12976*  20325   20398   21220*
TR4R    003664          7566#  12803*  12891
TR5     003646          7555#  12495   12544   12637*  12724   12977*  20286*  20297*  20314*  20329*  20332   20352*  20364*
                       20377*  20389*  20400*  20403   20567*  20575*  20578*  21225*
TR5R    003666          7567#  12804*  12893
TR6     003650          7556#  12496   12678   12684*  14838   21231*
TR6R    003670          7568#  12808*  12810*  12895   14852
TSP     002234          7189#  12675*  12745   12811
TSPA    103662         15955   16062   16230   16317   16438   16546   16672   16801   16923   17041   17120   17227   17336
                       17451   17600   17823   18038   18297   18514   18718   18936   19023   19149   19407   19447   19487
                       19746   19786   19826   19964#
TSTPSW  001756          7100#  12732*  12733*  12734*  12737*  12741*  12742   12746   12784
TTR0    002240          7191#  12539*  12972   15354
TTR1    002242          7192#  12540*  12973   15355
TTR2    002244          7193#  12541*  12974   15359
TTR3    002246          7194#  12542*  12975   15360
TTR4    002250          7195#  12543*  12976   15362
TTR5    002252          7196#  12544*  12977   15363
TTR6    002254          7197#
TWOSET  002064          7135#  13594*  13612*  13670*  13694   13738
TW1     002304          7209#  11670*  11671   11672
TW2     002306          7210#  11673*  11674   11677   11683   11688
TYPE  = 104401         11352   11522   11525   11554   13378   13382   13418   13420   13422   13424   13589   13608   13620
                       13642   13666   14873   14880   14961   14989   14999   15026   15092   15095   15124   15164   15192
                       15229   15779   15787   21262   21263   21264   21265#  21266
```

```
TYPE0    041226            6938   11605#
TYPE1    041376            6939   11637#
TYPFLD   002454            7286#  11895
TYPLO    044406            7217   12195#  12342
TYPLS    044462            7219   12213#  12222   12380
TYPSET   052150           13074   13079   13096#  13125   13144   13160   13201   13232
TYPSP    002336            7220    7221    7222#   7279    7280
TYPSZ    044244            7214   12160#  12366
TYPTAB   002316            7214#  12154
TYPTO    044300            7216   12171#  12198   12343
TYPTS    044416            7218   12200#  12217   12226   12375
TYPUZ    044276            7215   12169#
TYP3P    044526           12158   12229#
TYP3Z    044060           12122#
TYP4P    045466           12277   12382#
TYP4Z    044762           12276   12279#
TZ19     107314           17113   17150   17596   18027   18030   18067   18070   18503   18506   18929   18932   19142   19178
                          20835#
T$ARGC=  C00001           11308#  11322#  11401#  11406#  11409#  11416#  11455#  11457#  11458#  11471#  11480#  11483#  11493#
                          11584#  12756#  12819#  12821#  12834#  12970#  12980#  12982#  12983#  13760#  13763#  13764#  13770#
                          14074#  14075#  14098#  14103#  14104#  14120#  14121#  14191#  14194#  14195#  14226#  14229#  14242#
                          14245#  14246#  14247#  14266#  14269#  14270#  14278#  14281#  14299#  14302#  14508#  14511#  14512#
                          14767#  14835#  14837#  14838#  14839#  14840#  14843#  14849#  14851#  14858#  14859#  14863#  14868#
                          14869#  14884#  14887#  14888#  15306#  15317#  15319#  15330#  15332#  15337#  15351#  15389#  15417#
                          15419#  15420#  15433#  15448#  15579#  15582#  15585#  15588#  15591#  15594#  15597#  15600#  15603#
                          15606#  15609#  15612#  15615#  15618#  15621#  15624#  15627#  15630#  15633#  15636#  15640#  15643#
                          15647#  15650#  15654#  15657#  15661#  15664#  15668#  15671#  15675#  15678#  15682#  15685#  15689#
                          15692#  15696#  15699#  15703#  15706#  15710#  15713#  15717#  15720#  15724#  15727#  15731#  15734#
                          15738#  15741#  15745#  15748#  15751#  15754#  15764#  15765#  15768#  15781#  15789#  15791#  21380#
                          21422#  21464#
T0       103412           15912   15948   15949   15950   15951   15952   16025   16060   16061   16137   16143   16184   16224
                          16225   16227   16228   16273   16310   16311   16312   16313   16314   16394   16431   16432   16433
                          16434   16435   16510   16544   16545   16620   16626   16664   16666   16667   16669   16670   16758
                          16795   16796   16798   16799   16880   16917   16918   16920   16921   17001   17035   17036   17037
                          17038   17039   17080   17114   17115   17116   17117   17118   17151   17152   17153   17154   17155
                          17157   17190   17224   17225   17226   17260   17261   17262   17263   17300   17333   17334   17335
                          17372   17411   17448   17449   17483   17484   17486   17523   17562   17597   17598   17630   17632
                          17635   17641   17647   17671   17676   17682   17688   17717   17720   17726   17732   17764   17770
                          17776   17811   17813   17814   17816   17817   17819   17820   17821   17847   17849   17852   17858
                          17861   17862   17864   17888   17893   17899   17905   17933   17936   17942   17948   17979   17985
                          17988   17989   17991   18026   18028   18029   18031   18032   18034   18035   18036   18066   18068
                          18069   18071   18072   18074   18075   18076   18078   18102   18104   18107   18113   18119   18145
                          18150   18156   18162   18191   18194   18200   18206   18238   18244   18250   18285   18287   18288
                          18290   18291   18293   18294   18295   18321   18323   18326   18332   18335   18336   18338   18362
                          18367   18373   18379   18409   18412   18418   18424   18455   18461   18464   18465   18467   18502
                          18504   18505   18507   18508   18510   18511   18512   18538   18540   18545   18550   18578   18585
                          18590   18622   18627   18632   18669   18674   18712   18713   18715   18716   18745   18747   18752
                          18757   18787   18794   18799   18834   18839   18844   18884   18889   18930   18931   18933   18934
                          18970   18975   19017   19018   19019   19020   19021   19056   19057   19058   19059   19060   19062
                          19096   19101   19143   19144   19145   19146   19147   19179   19180   19181   19182   19183   19185
                          19212   19214   19217   19223   19229   19255   19260   19266   19272   19301   19304   19310   19316
                          19348   19354   19360   19395   19397   19398   19400   19401   19403   19404   19405   19435   19437
                          19438   19440   19441   19443   19444   19445   19475   19477   19478   19480   19481   19483   19484
                          19485   19516   19518   19519   19521   19522   19524   19525   19526   19527   19528   19552   19554
```

		19557	19563	19569	19593	19598	19604	19610	19640	19643	19649	19655	19687	19693
		19699	19734	19736	19737	19739	19740	19742	19743	19744	19774	19776	19777	19779
		19780	19782	19783	19784	19814	19816	19817	19819	19820	19822	19823	19824	19858#
T1A	103436	15942	15944	16056	16218	16220	16304	16306	16425	16427	16540	16660	16662	16789
		16911	17030	17032	17109	17111	17222	17331	17445	17594	17806	17808	17810	18021
		18023	18025	18280	18282	18284	18497	18499	18501	18706	18708	18924	18926	19011
		19014	19137	19140	19390	19392	19394	19729	19731	19733	19874#			
T1B	103462	17146	17148	19885#										
T1C	103474	18061	18063	19891#										
T1D	103506	19173	19897#											
T1E	103516	19176	19902#											
T1F	103524	19050	19906#											
T1G	103540	19769	19771	19773	19913#									
T1H	103546	19430	19432	19917#										
T1K	103562	19053	19924#											
T1L	103574	19434	19474	19930#										
T1M	103602	19511	19513	19934#										
T1N	103610	19470	19938#											
T1P	103616	17763	17978	18237	18454	19347	19686	19942#						
T1Q	103636	19472	19951#											
T1R	103646	19809	19813	19956#										
T1S	103654	19811	19960#											
T10	104760	15906	16024	16138	16179	16267	16388	16509	16621	16756	16878	16996	17075	17370
		17409	17521	17560	17638	17679	17723	17767	17855	17896	17939	17982	18110	18153
		18197	18241	18329	18370	18415	18458	18548	18588	18630	18672	18755	18797	18842
		18887	19220	19263	19307	19351	19560	19601	19646	19690	20211#			
T11	104774	15907	16268	16389	16997	17076	17187	17297	17643	17684	17728	17772	17860	17901
		17944	17987	18115	18158	18202	18246	18334	18375	18420	18463	18971	19097	19225
		19268	19312	19356	19565	19606	19651	19695	20219#					
T111	103666	18963	19089	19967#										
T112	103706	18966	19092	19977#										
T12	105012	15908	16140	16181	16269	16390	16623	16752	16874	16998	17077	17188	17298	17644
		17685	17729	17773	17902	17945	18116	18159	18203	18247	18376	18421	18972	19098
		19226	19269	19313	19357	19566	19607	19652	19696	20228#				
T13	105030	15909	16141	16182	16270	16391	16624	16753	16875	16999	17078	17189	17299	17645
		17686	17730	17774	17903	17946	18117	18160	18204	18248	18377	18422	18973	19099
		19227	19270	19314	19358	19515	19567	19608	19653	19697	20237#			
T14	105044	15910	15953	16142	16183	16229	16271	16315	16392	16436	16625	16671	16757	16800
		16879	16922	17000	17040	17079	17119	17156	17258	17646	17687	17731	17822	17904
		17947	18037	18065	18077	18118	18161	18205	18296	18378	18423	18513	18717	18756
		18798	18843	18888	18935	19022	19061	19148	19184	19228	19271	19315	19359	19406
		19446	19486	19568	19609	19654	19698	19745	19785	19825	20245#			
T14A	105056	17775	18249	20252#										
T15	105070	16021	20259#											
T15A	105110	16058	20269#											
T16	105234	17633	17674	17718	17762	18105	18148	18192	18236	20301#				
T16A	105116	17809	18283	19393	19433	19473	19732	19772	19812	20273#				
T16B	105174	19514	20290#											
T16Z	105606	17850	17891	17934	17977	18324	18365	18410	18453	20380#				
T16ZA	105540	18024	18064	18500	20368#									
T161	105416	19215	19258	19302	19346	19555	19596	19641	19685	20339#				
T17	105750	17680	17721	17765	17768	18154	18195	18239	18242	19264	19305	19349	19352	19602
		19644	19688	19691	20410#									
T17A	106010	19775	19778	20431#										

T2	103766	15900	16020	16132	16173	16261	16382	16505	16615	16747	16869	16991	17070	17186
		17259	17296	17367	17406	17481	17518	17557	17631	17672	17716	17760	17848	17889
		17932	17975	18103	18146	18190	18234	18322	18363	18408	18451	18539	18579	18621
		18663	18746	18788	18833	18878	18964	19090	19213	19256	19300	19344	19431	19471
		19512	19553	19594	19639	19683	19770	19810	20007#					
T2A	103776	17031	17110	17223	17332	17446	17595	17807	18022	18281	18498	18707	18925	19012
		19051	19138	19174	19391	19730	20013#							
T2AA	104004	15943	16057	16219	16305	16426	16541	16661	16790	16912	17147	18062	20018#	
T2B	104014	20023#												
T20	106024	16136	16139	16619	16622	17640	17681	17725	17769	17857	17898	17941	17984	18112
		18155	18199	18243	18331	18372	18417	18460	18544	18584	18626	18668	18751	18793
		18838	18883	18969	19095	19222	19265	19309	19353	19562	19603	19648	19692	20437#
T21	106042	17673	17715	17890	17931	18147	18189	18364	18407	18580	18620	18789	18832	19257
		19299	19595	19638	20446#									
T211	106056	17759	17974	18233	18450	18662	18877	19343	19682	20454#				
T212	106074	17761	17976	18235	18452	18664	18879	19345	19684	20463#				
T22	106152	17636	17639	17677	17724	18108	18111	18151	18198	18543	18546	18583	18628	19218
		19221	19261	19308	19558	19561	19599	19647	20492#					
T23	106172	20502#												
T24	106210	16393	16437	20511#										
T25	106224	16506	20519#											
T25A	106242	16542	20528#											
T26	106250	16507	20532#											
T27	106266	16748	16791	16870	16913	20541#								
T30	106302	16749	16871	20549#										
T30A	106322	16792	16914	20558#										
T31	106356	16750	16872	20570#										
T31A	106330	16793	16915	20562#										
T32	106416	16754	16835	16876	16957	20582#								
T33	106446	17185	17295	17366	17517	20599#								
T33A	106466	17405	17480	17556	20609#									
T331	106502	16990	17069	20616#										
T332	106522	16992	17071	20625#										
T333	106542	20635#												
T34	106610	16993	18967	20652#										
T34A	106556	17033	19015	19054	20642#									
T35	106666	16994	17368	20670#										
T35A	106716	20687#												
T35B	107046	18968	20743#											
T36	107144	17072	19093	20775#										
T36A	107116	17112	17149	19141	19177	20767#								
T37	107226	17073	17519	17897	17937	18371	18413	20792#						
T37A	107256	17980	17983	18456	18459	20812#								
T37B	107324	19094	20840#											
T4	104022	15902	16175	16263	16384	20027#								
T4A	104264	15945	16221	16307	16428	20082#								
T4I	104342	16617	16663	20099#										
T4IA	104604	20154#												
T40	107372	17183	17293	20867#										
T40A	107420	17220	20881#											
T40AA	107442	17329	20893#											
T40B	107424	17256	20885#											
T41	107452	17184	17294	20899#										
T41A	107436	17221	20890#											

```
T41AA   107446          17330   20896#
T41B    107472          17257   20909#
T411    104632          16134   20162#
T42     107504          17853   17856   17894   17940   18327   18330   18368   18416   18750   18753   18792   18840   20915#
T43     107522          17863   18337   18549   18589   18631   18673   18974   19100   20926#
T43A    107536          17990   18466   20935#
T44     107604          18541   18581   18623   18665   20953#
T44A    107552          18709   20943#
T45     107724          18586   18625   18667   18670   20982#
T46     110006          18748   18790   18835   18880   21012#
T46A    107760          18927   21001#
T47     110230          18795   18837   18882   18885   21057#
T5      104660          15903   15946   16176   16222   16264   16308   16385   16429   16618   17371   17410   17450   17485
                        17522   17561   17599   18542   18582   18624   18666   18710   18749   18791   18836   18881   18928
                        20170#
T50     110264          18965   19091   21081#
T50A    110314          19139   21095#
T50B    110320          19175   21099#
T50C    110330          19013   21104#
T50D    110344          19052   21111#
T51     110354          17407   21116#
T511    104672          16135   20177#
T52     110416          17558   21136#
T53     110450          15841   15870   21153#
T54     110460          15842   15871   21158#
T55     110470          15843   15872   21164#
T56     110500          15844   15873   21169#
T57     110510          15845   15874   21174#
T6      104710          15904   15985   16022   16096   16177   16180   16265   16348   16386   16470   16579   16668   16710
                        16713   16751   16832   16873   16954   20186#
T6A     104732          15947   16059   16223   16226   16309   16430   16543   16665   16794   16797   16916   16919   20197#
T60     110520          15846   15875   21180#
T61     110530          15847   15876   21185#
T7      104742          15905   16023   16178   16266   16387   16508   16755   16877   16995   17074   17369   17408   17520
                        17559   17637   17678   17722   17766   17854   17895   17938   17981   18109   18152   18196   18240
                        18328   18369   18414   18457   18547   18587   18629   18671   18754   18796   18841   18886   19219
                        19262   19306   19350   19559   19600   19645   19689   20202#
UDPAR0= 177660          6869#   13790*
UDPAR1= 177662          6869#   13791*
UDPAR2= 177664          6869#   13792*
UDPAR3= 177666          6869#   13793*
UDPAR4= 177670          6869#   13794*
UDPAR5= 177672          6869#   13795*
UDPAR6= 177674          6869#   13796*
UDPAR7= 177676          6869#   13797*
UDPDR0= 177620          6869#   13916
UDPDR1= 177622          6869#   14046*
UDPDR2= 177624          6869#
UDPDR3= 177626          6869#
UDPDR4= 177630          6869#
UDPDR5= 177632          6869#   14015*
UDPDR6= 177634          6869#
UDPDR7= 177636          6869#   13918
UIPAR0= 177640          6869#   13649   13826*  21327*
```

```
UIPAR1= 177642          6869#  13827*  21328*
UIPAR2= 177644          6869#  13828*  21329*
UIPAR3= 177646          6869#  13829*  21330*
UIPAR4= 177650          6869#  13830*  21331*
UIPAR5= 177652          6869#  13831*  21332*
UIPAR6= 177654          6869#  13832*  21333*
UIPAR7= 177656          6869#  13833*  21334*
UIPDR0= 177600          6869#  13926   21350
UIPDR1= 177602          6869#  14036*
UIPDR2= 177604          6869#  14000*  21451*  21474*
UIPDR3= 177606          6869#
UIPDR4= 177610          6869#
UIPDR5= 177612          6869#  14008*
UIPDR6= 177614          6869#
UIPDR7= 177616          6869#  13928   21352
UMTSTS  113260         21433   21442#
UPTP    053164         13252#  13307
USESTK= 000600          6869#
USP    =%C00006         6869#
VIP     002132          7154#  13250*  13251*  13252   13255   13302*  13304
VLCNT   003036          7360#  12766*  12769*
VLE     053402         13270   13309#
V16K   = ****** U        5631   6293    6863    6866    6898    6903    6912    6915    7031    7043    7825    8034    8040
                         8053   8059    8083    8087    8098    8102    8108    8111    8118    8124    8140    8143    8147
                         8150   8161    8164    8172    8175    8196    8203    8220    8225    8245    8251    8259    8778
                         8781   8788    8791    8798    8803    8806   11272   11277   11312   11317   11356   11370   11383
                        11391  11408   11517   11528   11553   11558   11578   11588   12774   12904   12967   12990   12993
                        13340  13343   13362   13368   13381   13385   13389   13392   13400   13404   13408   13623   13939
                        13954  13957   13962   13965   13970   13978   13984   13987   13991   13994   14002   14007   14010
                        14014  14017   14051   14154   14419   14477   14684   14687   15893   21547   21550
WD     = 000000  G       6887#   8158    8159
WONSGN  045242         12312   12327#
XADDN   007050          6958    8497#
XADDP   007050          6966    8496#
XASHN   006722          6964    8440#
XASHP   006722          6972    8439#
XCMPC   006502          6956    8353#
XCMPN   006646          6960    8413#
XCMPP   006646          6968    8412#
XCRLF   015652          8776#  14990
XCVTLN  007300          6965    8595#
XCVTLP  007300          6973    8594#
XCVTNL  007350          6961    8623#
XCVTNP  007222          6963    8566#
XCVTPL  007350          6969    8622#
XCVTPN  007222          6962    8565#
XDIVP   007050          6971    8501#
XINST   042142         11760#  11835
XLOCC   007002          6952    8471#
XLTBL1  120606          7086   11509   20513   21566#
XL2D    007412          6974    8644#
XL3D    007412          6975    8645#
XMATCH  006564          6957    8382#
XMOVC   006340          6949    8292#
```

```
XMOVRC  006340          6950    8293#
XMOVTC  006420          6951    8322#
XMULP   007050          6970    8500#
XSCANC  007140          6954    8534#
XSKPC   007002          6953    8472#
XSPANC  007140          6955    8535#
XSUBN   007050          6959    8499#
XSUBP   007050          6967    8498#
XT1     103416         17634   17675   17719   17851   17892   17935   18106   18149   18193   18325   18366   18411   19216
                       19259   19303   19556   19597   19642   19864#
YADDN   071370         15556   15632#
YADDP   072010         15564   15688#
YASHN   071704         15562   15674#
YASHP   072324         15570   15730#
YCMPC   071300         15554   15620#
YCMPN   071474         15558   15646#
YCMPP   072114         15566   15702#
YCVTLN  071746         15563   15681#
YCVTLP  072366         15571   15737#
YCVTNL  071536         15559   15653#
YCVTNP  071642         15561   15667#
YCVTPL  072156         15567   15709#
YCVTPN  071600         15560   15660#
YDIVP   072262         15569   15723#
YLOCC   071120         15550   15596#
YL2D    072430         11557   15572   15744#
YL3D    072470         15573   15750#
YMATCH  071334         15555   15626#
YMOVC   070774         15547   15578#
YMOVRC  071030         15548   15584#
YMOVTC  071064         15549   15590#
YMULP   072220         15568   15716#
YORN    065350         11410   11417   11460   11472   11484   14875   14903#
YSCANC  071210         15552   15608#
YSKPC   071154         15551   15602#
YSPANC  071244         15553   15614#
YSUBN   071432         15557   15639#
YSUBP   072052         15565   15695#
ZCCR    002040          7125#  15537*  15539*  15540*  15541
ZMSK    001772          7106#  12456
ZONED   052154         13041   13100#
ZPM     002464          7293#  11690*  12275   13038   13040   13042
$APTHD  001100          6913#
$ASTAT= ****** U        6919
$ATYC   001174          6919#
$ATY1   001150          6919#
$ATY3   001156          6919#  21264
$ATY4   001166          6919#
$CHARC  112162         21264#*
$CKSWR= ****** U       21265
$CMTAG= ****** U       11284   11293
$CNTLG  111573         21263#
$CNTLU  111566         21263#
$CPUOP  001142          6918#
```

```
$CRLF   111311          21262#  21263   21264
$DEVCT  001124           6918#
$ENV    001134           6918#   6919   21264
$ENVM   001135           6918#   6919   11284   11293   21264
$ETABL  001134           6918#
$ETEND  001150           6913    6918#
$FATAL  001116           6918#   6919*  12835*  12964*
$FFLG   001414           6919#*
$FILLC  112174          21264#
$FILLS  112173          21264#
$GTSWR= ****** U        21265
$HD   = 000003           6864
$HIBTS  001100           6913#
$ILLUP  112404          21266#
$LF     111312          21262#  21263   21264
$LFLG   001413           6919#*
$MADR1  001146           6918#
$MAIL   001114           6913    6918#   11284   11293   21264
$MAMS1  001144           6918#
$MBADR  001102           6913#
$MFLG   001412           6919#*
$MNEW   111611          21263#
$MSGAD  001130           6918#   6919*
$MSGLG  001132           6918#   6919*
$MSGTY  001114           6918#   6919*   9432*   9478*   9640*  11309*  12069*  12836*  12963*  13090*  13154*  13765*  14076*
                        14099*  14105*  14122*  14196*  14230*  14248*  14271*  14282*  14303*  14513*  21381*  21423*  21465*
$MSWR   111600          21263#
$MTYP1  001145           6918#
$NULL   112172          21264#
$PASS   001122           6918#  11284*  11293*  11350   11399   11723*  13374*  13587   13606   13618   13639   13664
$PASTM  001106           6913#
$POWER  112412          21266#
$PWRDN  112244          11284   11293   21266#
$PWRMG  112400          21266#
$PWRUP  112316          21266#
$QUES   111310          21262#  21263   21264
$RDCHR  111320          21263#  21265
$RDDEC  111132          21262#  21265
$RDLIN  111450          21263#  21265
$RDOCT= ****** U        21265
$RDSZ = 000010          21263#
$R2A  = ****** U        21265
$SAVRE= ****** U        21265
$SAVR6  112410          21266#*
$SETUP= 000014           6909#  11284   11293   21263
$STUP = 177777           6909#
$SVPC = 000220           6910#
$SWR  = 160000           6864#  21266
$SWREG  001136           6918#  11284   11293
$TESTN  001120           6918#  11283*  11718*  11721   11724*  13375*  21362*  21401*  21443*
$TKB    111316          21263#  21264
$TKS    111314          21263#  21264
$TN   = 000001           6864#
$TPB    112170          21264#*
```

```
$TPFLG  112175          21264#
$TPS    112166          21264#
$TRAP   112176          11284   11293   21265#
$TRAP2  112220          21265#
$TRP   = 000005         21265#
$TRPAD  112232          21265#
$TSTM   001104           6913#
$TTYIN  111556          21263#
$TYPBN= ****** U        21265
$TYPDS= ****** U        21265
$TYPE   111622           6919   21264#  21265
$TYPEC  112034          21264#
$TYPEX  112164          21264#
$TYPOC= ****** U        21265
$UNIT   001126           6918#
$UNITM  001110           6913#
$USWR   001140           6918#
$XOFF  = 000023         21264
$XON   = 000021         21263   21264
.      = 121206          6897#   6910#   6911#   6913#   6919#   7341#   7371#   7373#   7394#   8848#   8888#  10070#  10140#
                        10968#  10969#  10970#  10971#  10972#  10974#  10984#  10985#  10986#  10987#  10988#  10989#  10990#
                        10991#  10992#  11004#  14061#  15237#  21262   21263#  21264   21266   21548#  21556#  21558#  21566#
.$ASTA= ****** U         6919
.$X    = 001100          6913#
```

```
COMMEN   1537#   6869#
ENDCOM   1549#   6869#
ERROR    6869#
ESCAPE   1665#   6869#
GETPRI   1289#   6869#
GETSWR   1736#   6869#
MULT     4473#   6869#
M$COUN   6847#  11308#  11322#  11401#  11406#  11409#  11416#  11455#  11457#  11458#  11471#  11480#  11483#  11493#  11584#
        12756#  12819#  12821#  12834#  12970#  12980#  12982#  12983#  13760#  13763#  13764#  13770#  14074#  14075#  14098#
        14103#  14104#  14120#  14121#  14191#  14194#  14195#  14226#  14229#  14242#  14245#  14246#  14247#  14266#  14269#
        14270#  14278#  14281#  14299#  14302#  14508#  14511#  14512#  14767#  14835#  14837#  14838#  14839#  14840#  14843#
        14849#  14851#  14858#  14859#  14863#  14868#  14869#  14884#  14887#  14888#  15306#  15317#  15319#  15330#  15332#
        15337#  15351#  15389#  15417#  15419#  15420#  15433#  15448#  15579#  15582#  15585#  15588#  15591#  15594#  15597#
        15600#  15603#  15606#  15609#  15612#  15615#  15618#  15621#  15624#  15627#  15630#  15633#  15636#  15640#  15643#
        15647#  15650#  15654#  15657#  15661#  15664#  15668#  15671#  15675#  15678#  15682#  15685#  15689#  15692#  15696#
        15699#  15703#  15706#  15710#  15713#  15717#  15720#  15724#  15727#  15731#  15734#  15738#  15741#  15745#  15748#
        15751#  15754#  15764#  15765#  15768#  15781#  15789#  15791#  21380#  21422#  21464#
M$GNIN   6834#  11308#  11322#  11401#  11406#  11409#  11416#  11455#  11457#  11458#  11471#  11480#  11483#  11493#  11584#
        12756#  12819#  12821#  12834#  12970#  12980#  12982#  12983#  13760#  13763#  13764#  13770#  14074#  14075#  14098#
        14103#  14104#  14120#  14121#  14191#  14194#  14195#  14226#  14229#  14242#  14245#  14246#  14247#  14266#  14269#
        14270#  14278#  14281#  14299#  14302#  14508#  14511#  14512#  14767#  14835#  14837#  14838#  14839#  14840#  14843#
        14849#  14851#  14858#  14859#  14863#  14868#  14869#  14884#  14887#  14888#  15306#  15317#  15319#  15330#  15332#
        15337#  15351#  15389#  15417#  15419#  15420#  15433#  15448#  15579#  15582#  15585#  15588#  15591#  15594#  15597#
        15600#  15603#  15606#  15609#  15612#  15615#  15618#  15621#  15624#  15627#  15630#  15633#  15636#  15640#  15643#
        15647#  15650#  15654#  15657#  15661#  15664#  15668#  15671#  15675#  15678#  15682#  15685#  15689#  15692#  15696#
        15699#  15703#  15706#  15710#  15713#  15717#  15720#  15724#  15727#  15731#  15734#  15738#  15741#  15745#  15748#
        15751#  15754#  15764#  15765#  15768#  15781#  15789#  15791#  21380#  21422#  21464#
M$PRC    6804#  11308#  11322#  11401#  11406#  11409#  11416#  11455#  11457#  11458#  11471#  11480#  11483#  11493#  11584#
        12756#  12819#  12821#  12834#  12970#  12980#  12982#  12983#  13760#  13763#  13764#  13770#  14074#  14075#  14098#
        14103#  14104#  14120#  14121#  14191#  14194#  14195#  14226#  14229#  14242#  14245#  14246#  14247#  14266#  14269#
        14270#  14278#  14281#  14299#  14302#  14508#  14511#  14512#  14767#  14835#  14837#  14838#  14839#  14840#  14843#
        14849#  14851#  14858#  14859#  14863#  14868#  14869#  14884#  14887#  14888#  15306#  15317#  15319#  15330#  15332#
        15337#  15351#  15389#  15417#  15419#  15420#  15433#  15448#  15579#  15582#  15585#  15588#  15591#  15594#  15597#
        15600#  15603#  15606#  15609#  15612#  15615#  15618#  15621#  15624#  15627#  15630#  15633#  15636#  15640#  15643#
        15647#  15650#  15654#  15657#  15661#  15664#  15668#  15671#  15675#  15678#  15682#  15685#  15689#  15692#  15696#
        15699#  15703#  15706#  15710#  15713#  15717#  15720#  15724#  15727#  15731#  15734#  15738#  15741#  15745#  15748#
        15751#  15754#  15764#  15765#  15768#  15781#  15789#  15791#  21380#  21422#  21464#
M$PRIN   6792#  11308#  11322#  11401#  11406#  11409#  11416#  11455#  11457#  11458#  11471#  11480#  11483#  11493#  11584#
        12756#  12819#  12821#  12834#  12970#  12980#  12982#  12983#  13760#  13763#  13764#  13770#  14074#  14075#  14098#
        14103#  14104#  14120#  14121#  14191#  14194#  14195#  14226#  14229#  14242#  14245#  14246#  14247#  14266#  14269#
        14270#  14278#  14281#  14299#  14302#  14508#  14511#  14512#  14767#  14835#  14837#  14838#  14839#  14840#  14843#
        14849#  14851#  14858#  14859#  14863#  14868#  14869#  14884#  14887#  14888#  15306#  15317#  15319#  15330#  15332#
        15337#  15351#  15389#  15417#  15419#  15420#  15433#  15448#  15579#  15582#  15585#  15588#  15591#  15594#  15597#
        15600#  15603#  15606#  15609#  15612#  15615#  15618#  15621#  15624#  15627#  15630#  15633#  15636#  15640#  15643#
        15647#  15650#  15654#  15657#  15661#  15664#  15668#  15671#  15675#  15678#  15682#  15685#  15689#  15692#  15696#
        15699#  15703#  15706#  15710#  15713#  15717#  15720#  15724#  15727#  15731#  15734#  15738#  15741#  15745#  15748#
        15751#  15754#  15764#  15765#  15768#  15781#  15789#  15791#  21380#  21422#  21464#
M$PUT    6809#  11308#  11322#  11401#  11406#  11409#  11416#  11455#  11457#  11458#  11471#  11480#  11483#  11493#  11584#
        12756#  12819#  12821#  12834#  12970#  12980#  12982#  12983#  13760#  13763#  13764#  13770#  14074#  14075#  14098#
        14103#  14104#  14120#  14121#  14191#  14194#  14195#  14226#  14229#  14242#  14245#  14246#  14247#  14266#  14269#
        14270#  14278#  14281#  14299#  14302#  14508#  14511#  14512#  14767#  14835#  14837#  14838#  14839#  14840#  14843#
        14849#  14851#  14858#  14859#  14863#  14868#  14869#  14884#  14887#  14888#  15306#  15317#  15319#  15330#  15332#
        15337#  15351#  15389#  15417#  15419#  15420#  15433#  15448#  15579#  15582#  15585#  15588#  15591#  15594#  15597#
        15600#  15603#  15606#  15609#  15612#  15615#  15618#  15621#  15624#  15627#  15630#  15633#  15636#  15640#  15643#
```

```
            15647#  15650#  15654#  15657#  15661#  15664#  15668#  15671#  15675#  15678#  15682#  15685#  15689#  15692#  15696#
            15699#  15703#  15706#  15710#  15713#  15717#  15720#  15724#  15727#  15731#  15734#  15738#  15741#  15745#  15748#
            15751#  15754#  15764#  15765#  15768#  15781#  15789#  15791#  21380#  21422#  21464#
M$PUT1       6820#  11308#  11322#  11401#  11406#  11409#  11416#  11455#  11457#  11458#  11471#  11480#  11483#  11493#  11584#
            12756#  12819#  12821#  12834#  12970#  12980#  12982#  12983#  13760#  13763#  13764#  13770#  14074#  14075#  14098#
            14103#  14104#  14120#  14121#  14191#  14194#  14195#  14226#  14229#  14242#  14245#  14246#  14247#  14266#  14269#
            14270#  14278#  14281#  14299#  14302#  14508#  14511#  14512#  14767#  14835#  14837#  14838#  14839#  14840#  14843#
            14849#  14851#  14858#  14859#  14863#  14868#  14869#  14884#  14887#  14888#  15306#  15317#  15319#  15330#  15332#
            15337#  15351#  15389#  15417#  15419#  15420#  15433#  15448#  15579#  15582#  15585#  15588#  15591#  15594#  15597#
            15600#  15603#  15606#  15609#  15612#  15615#  15618#  15621#  15624#  15627#  15630#  15633#  15636#  15640#  15643#
            15647#  15650#  15654#  15657#  15661#  15664#  15668#  15671#  15675#  15678#  15682#  15685#  15689#  15692#  15696#
            15699#  15703#  15706#  15710#  15713#  15717#  15720#  15724#  15727#  15731#  15734#  15738#  15741#  15745#  15748#
            15751#  15754#  15764#  15765#  15768#  15781#  15789#  15791#  21380#  21422#  21464#
NEWTST       1596#   6869#
POP          2114#   6869#   6919   21262   21266
PRINTB       6751#  11308   11322   11401   11406   11409   11416   11455   11457   11458   11471   11480   11483   11493   11584
            12756   12819   12821   12834   12970   12980   12982   12983   13760   13763   13764   13770   14074   14075   14098
            14103   14104   14120   14121   14191   14194   14195   14226   14229   14242   14245   14246   14247   14266   14269
            14270   14278   14281   14299   14302   14508   14511   14512   14767   14835   14837   14838   14839   14840   14843
            14849   14851   14858   14859   14863   14868   14869   14884   14887   14888   15306   15317   15319   15330   15332
            15337   15351   15389   15417   15419   15420   15433   15448   15579   15582   15585   15588   15591   15594   15597
            15600   15603   15606   15609   15612   15615   15618   15621   15624   15627   15630   15633   15636   15640   15643
            15647   15650   15654   15657   15661   15664   15668   15671   15675   15678   15682   15685   15689   15692   15696
            15699   15703   15706   15710   15713   15717   15720   15724   15727   15731   15734   15738   15741   15745   15748
            15751   15754   15764   15765   15768   15781   15789   15791   21380   21422   21464
PUSH         2106#   6869#   6919   21262   21266
REPORT       5432#   6869#
SCOPE        6869#
SETPRI       1257#   6869#
SETTRA      21265#
SETUP        1313#   6869#  11284   11293
SKIP         1699#   6869#
SLASH        1489#   6869#
SPACE        6869#
STARS        1458#   6869#   6910   6913   6918   6919   6920   21257   21262   21263   21264   21265   21266
SWRSU        1427#   6869#  11284#  11293#
TRMTRP      21265#
TYPBIN       2050#   6869#
TYPDEC       2020#   6869#
TYPNAM       1790#   6869#
TYPNUM       1987#   6869#
TYPOCS       1940#   6869#
TYPOCT       1903#   6869#
TYPTXT       1857#   6869#
$$ESCA       1678#   6869#
$$NEWT       1632#   6869#
$$SET       21265#
$$SETM      11284#  11293#
$$SKIP       1712#   6869#
.EQUAT        187#
.HEADE         61#   6859#   6864
.KT11         330#
.PRINT       6859#
.SETUP       1191#   6859#   6909
```

```
.SWRHI    103#
.$ACT1   5041#   6860#   6910
.$APTB   5085#   6860#   6918
.$APTH   5341#   6860#   6913
.$APTY   5516#   6860#   6919
.$ASTA   5387#
.$CATC    916#   6859#   6897
.$CMTA   1027#
.$DB2D   4671#
.$DB2O   4794#
.$DIV    4574#
.$EOP    2173#
.$ERRO   2654#
.$ERRT   2849#
.$MULT   4511#
.$POWE   4186#   6859#  21266
.$RAND   4261#
.$RDDE   3857#   6861#  21262
.$RDOC   3766#
.$READ   3364#   6861#  21263
.$R2AZ   4938#
.$SAVE   3932#
.$SB2D   4755#
.$SB2O   4856#
.$SCOP   2408#
.$SIZE   4314#
.$SUPR   4894#
.$TRAP   4034#   6859#  21265
.$TYPB   3257#
.$TYPD   3180#
.$TYPE   2936#   6859#  21264
.$TYPO   3084#
.$40CA    955#
.1170     509#   6859#   6869
```

```
ADD     6919  8871  8988  8990  8997  9004  9036  9038  9045  9052  9062  9070  9091  9093  9139
        9141  9185  9187  9212  9218  9227  9233  9243  9254  9312  9370  9394  9409  9425  9443
        9465  9531  9575  9598  9611  9616  9620  9630  9647  9658  9662  9971  9983  9988  9990
       10201 10204 10207 10210 10212 10243 10467 10471 10486 10503 10849 10850 10875 10878 11179
       11184 11602 11608 11611 11619 11626 11632 11639 11644 11645 11654 11669 11753 11757 11769
       11834 11898 11902 11919 11925 11930 11949 11952 11958 12012 12027 12093 12154 12180 12291
       12295 12324 12329 12394 12398 12413 12421 12530 12533 12558 12566 12567 12575 12579 12580
       12586 12610 12611 12613 12624 12628 12639 12661 12662 12864 12914 12915 12933 12934 13004
       13012 13102 13145 13161 13166 13210 13251 13253 13255 13256 13286 13290 13291 13295 13301
       13332 13333 13334 13360 13454 13462 13469 13482 13496 13508 14149 14309 14373 14406 14416
       14439 14467 14575 14659 14671 14690 14760 14804 14805 14809 14854 14896 14897 14935 14936
       14937 14970 14971 14991 15004 15005 15028 15032 15045 15046 15149 15181 15215 15446 15483
       15498 15536 15769 20030 20031 20044 20061 20079 20088 20102 20103 20116 20133 20151 20157
       20158 20165 20166 20278 20279 20284 20285 20295 20296 20306 20307 20312 20313 20320 20321
       20328 20335 20344 20345 20350 20351 20358 20363 20371 20372 20375 20376 20383 20384 20387
       20388 20393 20394 20397 20406 20565 20566 20573 20574 20647 20648 20657 20658 20665 20770
       20771 20778 20779 20784 20948 20949 20958 20959 20975 20978 21005 21007 21015 21016 21027
       21041 21052 21054 21191 21237 21262 21264 21385 21427 21469
ASL     9549  9550  9551  9552  9600  9601  9602  9603 10874 10877 11106 11107 11108 11109 11601
       11618 11625 11631 11653 11667 11668 11684 11685 11752 11756 11768 11802 11803 11804 11805
       11814 11815 11816 11817 11826 11827 11828 11829 12153 12163 12164 12165 12166 12328 13117
       13118 13277 13359 13450 13451 13453 13461 13477 13488 13489 13491 13514 14308 14658 14670
       15015 15016 15017 15117 15118 15119 15535 21262 21265
ASR     6919  9310  9337  9338  9339  9340  9530 10567 11137 11679 11680 11681 11689 12125 12126
       12127 12128 12134 12135 12136 12137 12232 12233 12234 12235 12241 12242 12243 12244 12282
       12283 12284 12285 12303 12304 12305 12306 12357 12358 12359 12360 12384 12385 12386 12387
       12392 12395 12420 12554 13110 13111 13112 13185 13186 13187 13217 13218 13219 13475 13502
       13503 15422 15423 15424 15425 20057 20069 20086 20094 20129 20141 20276 20282 20293 20304
       20310 20318 20324 20326 20342 20348 20356 20361 20645 20655 20663 20946 20956 20971 20973
       21037
BCC     9972  9981 10187 10194 10199 10202 10205 10208 10211 10213 10244
BEQ     6919  9011  9016  9020  9059  9067  9074  9114  9118  9123  9145  9147  9151  9171  9175
        9179  9192  9194  9196  9215  9230  9236  9245  9256  9258  9315  9321  9327  9331  9349
        9351  9353  9399  9431  9452  9474  9541  9560  9574  9639  9649  9651  9678  9690  9693
        9696  9707  9711  9721  9728  9738  9831  9848  9865  9950  9977 10029 10032 10038 10040
       10052 10155 10165 10178 10230 10274 10289 10302 10304 10311 10342 10357 10370 10372 10379
       10412 10425 10428 10453 10474 10495 10516 10538 10542 10565 10591 10594 10605 10611 10626
       10651 10660 10672 10675 10689 10704 10724 10743 10762 10828 10837 10839 10844 10857 10871
       11069 11114 11284 11293 11321 11349 11393 11496 11516 11519 11521 11576 11624 11630 11643
       11692 11720 11747 11796 11842 11894 11905 11924 11929 11943 11948 11968 11994 11999 12025
       12050 12058 12060 12062 12064 12066 12068 12077 12081 12091 12102 12106 12144 12173 12176
       12185 12189 12202 12207 12299 12312 12314 12341 12346 12349 12403 12423 12425 12429 12433
       12437 12504 12510 12515 12548 12550 12563 12572 12582 12592 12596 12621 12623 12659 12681
       12689 12691 12699 12704 12806 12818 12830 12833 12846 12853 12857 12861 12868 12874 12879
       12896 12906 12911 12924 12937 12969 12979 12989 13025 13027 13035 13039 13041 13043 13079
       13089 13153 13175 13205 13237 13248 13258 13263 13265 13269 13284 13293 13305 13318 13329
       13341 13347 13351 13353 13377 13390 13410 13412 13414 13446 13584 13695 13739 13741 13860
       13870 13881 13884 13886 13891 13946 14023 14025 14031 14071 14090 14093 14135 14138 14140
       14142 14182 14214 14217 14235 14241 14262 14277 14296 14339 14526 14661 14675 14701 14738
       14777 14834 14842 14847 14853 14857 14862 14867 14891 14908 14912 14926 14928 14930 14994
       14996 15024 15038 15062 15064 15066 15068 15070 15072 15074 15076 15078 15088 15090 15114
       15116 15218 15267 15270 15277 15280 15283 15287 15290 15293 15296 15300 15314 15327 15339
       15344 15353 15358 15381 15395 15480 15482 15486 15491 15514 15518 15520 15763 20042 20049
       20060 20066 20071 20114 20121 20132 20138 20143 20966 20969 21025 21040 21262 21263 21264
```

```
BGE     12410
BGT     11910  11961  12266  12480  15013  15225  21262  21263
BHI      8992   9040   9095   9764  10488  10720  10739  11970  12121  14238  14298  14312  14656  14789  21021
        21023  21032  21034  21046  21048
BHIS     9872  10059  10505  11613  14265  14375  14380  14408  14414
BIC      9305   9311   9322   9347   9372   9397   9447   9464   9471   9481   9485   9524   9532   9569   9571
         9613   9663   9974  10017  10175  10280  10320  10348  10391  10443  10465  10468  10470  10515  10573
        10580  10587  10615  10618  10681  10683  10823  10887  10899  11022  11027  11559  11580  11600  11675
        11678  11767  11807  11819  11831  11895  12014  12026  12051  12055  12056  12078  12129  12131  12133
        12138  12141  12236  12238  12245  12246  12255  12258  12286  12288  12289  12307  12336  12356  12388
        12390  12450  12453  12456  12465  12687  12731  12733  12744  12748  12798  12872  12875  12876  13023
        13105  13109  13116  13135  13142  13147  13158  13163  13168  13180  13184  13207  13212  13216  13239
        13245  13246  13261  13267  13280  13363  13447  13449  13460  13474  13487  13501  13513  13701  13709
        13710  13711  13712  13715  13742  13758  13867  14133  14162  14171  14177  14208  14250  14285  14500
        14653  14685  14694  14736  14787  14909  14910  14968  14969  14982  15014  15022  15082  15098  15103
        15112  15137  15139  15161  15189  15312  15325  15426  15430  15515  15516  15540  21187  21207  21218
        21229  21263  21264
BICB     9554   9599  10840  11037  11046  12160  12418  12426  14706  15121
BIS      9572   9665   9749   9760   9868   9870   9873  10023  10055  10057  10060  10183  10231  10236  10248
        10253  10308  10312  10323  10376  10380  10383  10444  10581  10586  10588  10602  10606  10619  10629
        10765  10767  10888  10889  10900  10914  11129  11435  11438  11451  11808  11820  11832  12247  12270
        12457  12734  12737  12741  12768  12776  12778  12783  13178  13242  13243  13700  13716  13724  13725
        13726  13727  13756  13876  13894  13898  13900  14184  14215  14218  14219  14322  14517  14537  14552
        15018  15162  15190  15216  15541  21202  21208  21213  21219  21224  21230  21235
BISB     9555   9604  10842  11110  11115  12167  12430  12434  12438  12440  14838  14840  14859  14863  14887
        14888  15122  15538
BIT      9314   9320   9451   9461   9547   9677   9689   9692   9695   9949  10154  10223  10249  10273  10341
        10424  10427  10537  10671  10674  10806  10809  10827  10856  11020  11025  11055  11087  11784  11839
        11864  11866  11884  11886  11915  11942  11976  12049  12175  12184  12188  12206  12275  12348  12416
        12428  12432  12436  12472  12486  12545  12805  12832  12847  12898  13007  13028  13036  13049  13055
        13061  13078  13085  13093  13176  13234  13349  13445  13696  13880  14181  14189  14239  14261  14275
        14338  14506  14681  14776  14833  14907  15269  15276  15279  15282  15286  15289  15292  15295  15299
        15338  15343  15352  15357  15380  15513  15760  21262
BITB     6919   9220   9235  10838  11284  11293  21264
BLE     10451
BLO      8993   9007   9041   9055   9096   9110   9483   9731   9765  10021  10721  10740  11514  11694  11701
        11708  14225  15105  15212  20333  20404
BLOS     9661  10322  10382  11722  12452  12464  12922  12930  13914  13919  13924  13929  13934  14705  21263
        21343  21348  21353
BLT     11647  11877  15011  15166  15194  15224  21262  21263  21264
BMI      9296   9307   9515   9527   9557   9742   9753   9843  10000  10226  10279  10286  10347  10354  10408
        10448  10497  10865  12401  13338
BNE      6919   8866   8869   8877   9165   9221   9247   9324   9329   9359   9366   9379   9381   9387   9393
         9408   9413   9420   9424   9428   9436   9449   9459   9462   9468   9476   9534   9536   9548   9582
         9584   9587   9592   9594   9607   9610   9615   9623   9629   9632   9705   9781   9796   9858   9957
         9965   9967   9998  10027  10222  10224  10233  10235  10250  10307  10319  10375  10390  10439  10478
        10536  10550  10552  10579  10601  10617  10624  10694  10709  10749  10754  10807  10810  10826  11021
        11026  11056  11088  11112  11284  11293  11351  11385  11400  11581  11583  11594  11726  11776  11785
        11800  11812  11824  11840  11857  11865  11867  11885  11887  11916  11935  11977  12017  12110  12151
        12221  12224  12254  12259  12269  12276  12309  12321  12417  12475  12489  12546  12594  12598  12615
        12677  12728  12736  12740  12751  12753  12761  12771  12816  12848  12882  12884  12886  12888  12890
        12892  12894  12899  12903  12909  12913  12932  12948  12950  12952  12954  12957  13010  13029  13031
        13037  13050  13056  13062  13068  13072  13077  13084  13101  13123  13125  13133  13140  13144  13149
        13160  13165  13170  13177  13191  13193  13209  13222  13224  13235  13241  13314  13316  13321  13355
```

```
            13357  13522  13526  13530  13534  13546  13550  13554  13558  13586  13588  13605  13607  13619  13640
            13665  13699  13744  13746  13748  13750  13752  13754  13784  13788  13858  13863  13872  13875  13893
            13897  13908  13951  13953  13975  13982  13999  14006  14027  14029  14033  14039  14043  14095  14097
            14180  14190  14389  14391  14394  14396  14398  14400  14402  14404  14412  14459  14503  14507  14678
            14682  14699  14703  14708  14740  14744  14749  14753  14757  14872  14914  14919  14932  14984  14988
            14998  15273  15316  15329  15387  15391  15393  15411  15416  15489  15524  15767  15771  15775  15783
            20787  20964  21243  21262  21263  21264  21266  21301  21305  21387  21429  21471
BPL          9657   9787   9794   9802   9806   9837   9867   9960  10054  10220  10239  10247  10252  10476  14131
            14734  14905  14942  14980  15020  15160  15188  15511  21263  21264
BR           6919   8995   9002   9013   9018   9022   9043   9050   9064   9072   9076   9098   9105   9116   9120
             9125   9167   9173   9181   9201   9298   9317   9341   9354   9361   9368   9402   9406   9411   9417
             9422   9429   9437   9454   9517   9539   9543   9585   9588   9590   9596   9605   9608   9618   9621
             9626   9634   9636   9643   9653   9671   9673   9680   9709   9768   9771   9774   9790   9798   9810
             9853   9869   9942   9969   9984  10007  10030  10034  10056  10147  10215  10237  10295  10309  10363
            10377  10414  10430  10441  10462  10490  10508  10520  10540  10569  10596  10603  10628  10664  10677
            10697  10712  10746  10750  10755  10763  10766  10830  10841  10851  10853  10859  10903  11064  11090
            11167  11171  11175  11180  11185  11223  11227  11231  11235  11239  11271  11284  11290  11293  11311
            11324  11329  11334  11479  11482  11489  11491  11499  11524  11635  11697  11704  11711  11749  11809
            11821  11907  11951  12002  12041  12085  12095  12116  12168  12169  12178  12182  12187  12191  12193
            12198  12204  12209  12211  12217  12222  12226  12256  12261  12301  12317  12326  12351  12353  12406
            12415  12431  12435  12439  12441  12568  12576  12584  12604  12612  12629  12665  12679  12711  12738
            12764  12772  12775  12777  12782  12786  12795  12809  12820  12863  12925  12935  12981  13052  13058
            13064  13086  13137  13150  13171  13200  13231  13270  13287  13307  13380  13524  13528  13532  13536
            13548  13552  13556  13560  13603  13616  13635  13644  13652  13655  13658  13661  13678  13714  13755
            13757  13768  13865  13888  13895  13899  13948  13960  13973  13990  13997  14013  14035  14037  14041
            14045  14143  14145  14147  14187  14236  14342  14415  14440  14468  14505  14554  14576  14680  14692
            14696  14742  14747  14751  14755  14779  14836  14850  14855  14860  14883  14886  14889  14895  14917
            14924  14934  14956  14960  14963  14966  14986  15025  15029  15033  15079  15085  15093  15096  15101
            15109  15126  15141  15153  15167  15195  15214  15220  15227  15318  15331  15342  15347  15356  15361
            15399  15403  15418  15484  15487  15494  15581  15587  15593  15599  15605  15611  15617  15623  15629
            15635  15642  15649  15656  15663  15670  15677  15684  15691  15698  15705  15712  15719  15726  15733
            15740  15747  15753  15773  15777  15785  15790  20967  21204  21210  21215  21221  21226  21232  21253
            21262  21263  21264  21266  21391  21433
BVS         21262
CCC          9970   9978  10184  10191  10196  10203  10242
CLC         14800
CLR          8857   9005   9025   9026   9027   9053   9079   9080   9081   9108   9128   9129   9130   9325   9333
             9389   9400   9401   9405   9416   9421   9453   9456   9469   9488   9538   9558   9589   9655   9672
             9676   9681   9683   9684   9685   9703   9719   9724   9725   9726   9739   9740   9776   9779   9783
             9784   9785   9789   9797   9835   9859   9863   9875   9876   9877   9878   9881   9941   9944   9945
             9946   9947   9948   9955   9958   9975   9985  10004  10008  10019  10050  10064  10065  10146  10149
            10150  10151  10152  10153  10163  10228  10255  10256  10267  10268  10269  10272  10277  10300  10325
            10326  10334  10335  10336  10337  10340  10345  10368  10393  10394  10401  10402  10422  10423  10431
            10432  10433  10434  10435  10457  10491  10506  10509  10539  10553  10562  10599  10631  10632  10635
            10663  10669  10670  10678  10718  10769  10770  10771  10772  10803  10812  10831  10855  10860  10907
            10908  10922  10923  10937  10939  10947  10956  11016  11017  11032  11033  11041  11042  11078  11119
            11120  11282  11283  11284  11288  11289  11291  11292  11293  11300  11302  11304  11339  11342  11344
            11346  11354  11361  11362  11363  11364  11365  11367  11368  11369  11492  11503  11504  11505  11506
            11507  11563  11571  11572  11573  11574  11615  11616  11724  11740  11741  11744  11966  12071  12560
            12589  12618  12656  12747  12749  12796  12838  12839  12840  12841  12945  12955  12962  13080  13126
            13127  13128  13129  13196  13226  13278  13372  13373  13375  13415  13537  13581  13612  13617  13670
            13679  13713  13789  13864  13878  13887  13889  13912  13917  13922  13927  13932  14068  14087  14117
            14144  14165  14172  14174  14426  14431  14453  14457  14461  14464  14498  14536  14540  14551  14555
            14570  14572  14697  14758  14759  14838  14840  14859  14863  14865  14887  14888  14892  14894  14915
```

```
        14978  15151  15183  15207  15209  15275  15297  15379  15400  15434  15506  15507  15508  15792  21262
        21266  21306  21389  21431  21473  21483
CLRB     6919   9061   9069   9217   9232   9748   9759  10585  15228  15405  21262  21263  21264
CMP      8868   8876   8991   9006   9010   9015   9019   9030   9039   9054   9058   9066   9073   9084   9094
         9109   9113   9117   9122   9133   9144   9146   9164   9174   9191   9193   9214   9229   9244   9255
         9326   9328   9398   9448   9458   9467   9473   9482   9660   9727   9763   9780   9956   9964   9966
         9976  10020  10031  10321  10381  10487  10504  10593  10719  10738  10761  10825  10843  11113  11284
        11293  11348  11513  11518  11612  11646  11693  11700  11707  11721  11746  11798  11810  11822  11876
        11906  11908  11922  11928  11960  11969  12059  12061  12063  12065  12067  12120  12172  12201  12220
        12223  12268  12340  12422  12451  12463  12479  12503  12508  12514  12547  12549  12571  12581  12591
        12593  12595  12597  12622  12658  12676  12680  12688  12690  12735  12739  12750  12760  12815  12817
        12844  12852  12856  12860  12867  12878  12883  12885  12887  12889  12891  12893  12895  12905  12908
        12910  12912  12921  12929  12931  13024  13026  13038  13040  13042  13076  13083  13088  13124  13132
        13136  13139  13143  13148  13152  13159  13164  13169  13192  13199  13208  13223  13230  13240  13292
        13317  13352  13521  13525  13529  13533  13545  13549  13553  13557  13680  13743  13745  13747  13749
        13751  13753  13861  13869  13871  13873  13896  13913  13918  13923  13928  13933  13974  13998  14024
        14026  14032  14042  14070  14092  14094  14096  14134  14179  14223  14263  14297  14310  14374  14379
        14388  14390  14392  14395  14397  14399  14401  14403  14407  14411  14413  14458  14502  14655  14674
        14676  14698  14700  14702  14707  14737  14739  14743  14748  14752  14756  14788  14846  14852  14911
        14913  14918  14925  14927  14929  14931  14983  14987  14993  14995  14997  15010  15012  15023  15037
        15061  15063  15065  15067  15069  15071  15073  15075  15077  15087  15089  15104  15223  15313  15315
        15326  15328  15481  15485  15488  15517  15523  15774  20332  20403  21020  21022  21031  21033  21045
        21047  21242  21263  21342  21347  21352
CMPB     6919   9148   9150   9168   9170   9176   9178   9195   9246   9257   9323   9330   9348   9350   9352
         9357   9380   9383   9392   9407   9412   9419   9423   9427   9430   9435   9533   9535   9573   9583
         9586   9591   9606   9609   9622   9628   9638   9730   9737   9871  10026  10058  10177  10452  10472
        10477  10494  10625  10650  10688  10703  10742  12923  12936  13262  13583  13585  13604  14137  14139
        14141  14704  15113  15115  15410  15519  20786  21262  21263  21264
COM      9803   9807   9962   9963  10240  10241  11380  12692  13069  14754  15539
DEC      9152   9153   9172   9180   9222   9237   9248   9259   9356   9414   9486   9559   9642   9652   9997
        10015  10043  10406  10461  10612  10872  11111  11858  11859  11936  11937  12084  12094  12109  12114
        12149  12216  12263  12264  12267  12297  12319  12320  12325  12408  12409  12414  12565  12573  12769
        12939  12940  13282  13311  13315  14801  14922  15219  15390
DECB     9786   9793   9842  10278  10285  10346  10353  10437  10446  10460  10518  10519  10546  10662  10864
        15159  15165  15187  15193  21264
EMT      6869
HALT     6897   7062   7222   9433   9479   9641  11310  12070  12700  12787  12788  12789  12790  12791  12837
        13091  13155  13766  14077  14100  14106  14123  14197  14231  14249  14273  14283  14304  14514  21264
        21266  21382  21424  21466
INC      6919   9198   9308   9528   9624   9654   9766   9767   9788   9804   9808   9829   9839   9973  10002
        10024  10033  10047  10182  10245  10287  10355  10410  10568  10595  10627  10695  10710  10741  10745
        10902  11063  11089  11138  11381  11511  11621  11718  11723  11725  11727  11855  11933  12108  12197
        12399  12961  13075  13103  13173  13203  13374  13520  13544  14183  14188  14222  14253  14516  14553
        14654  15213  15396  15397  20277  20283  20294  20305  20311  20319  20343  20349  20357  20362  20646
        20656  20664  20788  20947  20957  21266  21362  21401  21443
INCB    10482  15409  21264
IOT      6869
JMP      6897   6899   6900   6901   9208   9223   9238   9249   9382   9388   9390  10522  10665  11065  11066
        11126  11196  11205  11219  11253  11265  11398  11405  11407  11411  11412  11413  11414  11418  11419
        11420  11421  11425  11428  11429  11434  11437  11439  11443  11446  11450  11452  11456  11461  11462
        11463  11464  11473  11474  11475  11476  11485  11486  11487  11488  11603  11770  11777  11783  11835
        11848  11853  11860  11879  11911  11931  11938  11962  11971  12039  12072  12073  12086  12096  12117
        12155  12158  12227  12272  12277  12310  12330  12342  12343  12366  12370  12375  12380  12445  12481
        12525  12551  12552  12666  12823  12958  12985  12986  12991  12996  13044  13045  13046  13047  13073
```

```
        13074   13081   13094   13096   13130   13197   13201   13228   13232   13244   13249   13297   13323   13330   13367
        13369   13405   13416   13417   13432   13433   13436   13571   13785   14081   14111   14258   14288   14876   14877
        14878   14879   20080   20152   20336   20407   20979   21053   21055   21302   21477   21486
JSR      6919    8878    9297    9299    9360    9367    9415    9516    9518    9702    9718    9750    9761    9791    9799
         9809    9817    9825    9828    9852    9862    9982    9995   10005   10025   10046   10049   10162   10181   10276
        10284   10294   10299   10317   10344   10352   10362   10367   10388   10409   10459   10484   10502   10514   10533
        10548   10559   10583   10589   10622   10657   10692   10707   10731   10737   10747   10752   10758   10760   10781
        10788   10802   10804   10805   10808   10822   10835   10869   10886   10898   10913   10944   10953   10962   11015
        11018   11019   11024   11036   11045   11054   11062   11076   11086   11098   11105   11125   11308   11322   11323
        11328   11333   11347   11378   11397   11401   11403   11404   11406   11409   11410   11416   11417   11424   11426
        11433   11436   11442   11444   11445   11449   11455   11457   11458   11460   11471   11472   11480   11481   11483
        11484   11493   11494   11497   11560   11577   11584   11595   11596   11597   11657   11659   11695   11698   11702
        11705   11709   11712   11730   11739   11782   11788   11790   11794   11843   11845   11849   11851   11868   11871
        11888   11890   11900   11917   11920   11926   11944   11945   11978   11980   11983   11987   11988   11995   11996
        12006   12007   12018   12021   12029   12035   12174   12183   12205   12300   12315   12338   12347   12373   12378
        12404   12427   12449   12455   12462   12501   12505   12506   12511   12512   12516   12520   12553   12570   12590
        12619   12657   12693   12696   12705   12756   12767   12812   12819   12821   12834   12842   12849   12850   12854
        12855   12858   12859   12862   12865   12869   12877   12970   12980   12982   12983   12984   13238   13365   13396
        13468   13481   13495   13507   13523   13527   13531   13535   13547   13551   13555   13559   13569   13760   13762
        13763   13764   13770   13866   13879   14074   14075   14098   14103   14104   14120   14121   14136   14178   14185
        14186   14191   14193   14194   14195   14202   14203   14211   14226   14228   14229   14242   14244   14245   14246
        14247   14255   14260   14266   14268   14269   14270   14274   14278   14280   14281   14299   14301   14302   14501
        14504   14508   14510   14511   14512   14524   14652   14683   14693   14716   14718   14741   14767   14768   14775
        14786   14832   14835   14837   14838   14839   14840   14843   14849   14851   14858   14859   14863   14864   14868
        14869   14875   14882   14884   14885   14887   14888   14938   14954   14958   15008   15031   15084   15100   15108
        15140   15278   15281   15284   15288   15291   15294   15298   15302   15306   15309   15317   15319   15322   15330
        15332   15335   15337   15350   15351   15364   15389   15401   15406   15407   15412   15417   15419   15420   15427
        15431   15433   15448   15522   15526   15579   15580   15582   15585   15586   15588   15591   15592   15594   15597
        15598   15600   15603   15604   15606   15609   15610   15612   15615   15616   15618   15621   15622   15624   15627
        15628   15630   15633   15634   15636   15640   15641   15643   15647   15648   15650   15654   15655   15657   15661
        15662   15664   15668   15669   15671   15675   15676   15678   15682   15683   15685   15689   15690   15692   15696
        15697   15699   15703   15704   15706   15710   15711   15713   15717   15718   15720   15724   15725   15727   15731
        15732   15734   15738   15739   15741   15745   15746   15748   15751   15752   15754   15764   15765   15768   15781
        15789   15791   21264   21372   21380   21384   21412   21422   21426   21454   21464   21468
MFPI    12807   14340
MOV      6919    8851    8852    8853    8854    8855    8856    8858    8859    8860    8861    8862    8863    8864    8872
         8873    8874    8875    8879    8880    8881    8882    8883    8884    8987    8989    8994    8996    8998    8999
         9001    9003    9008    9009    9014    9023    9028    9029    9031    9035    9037    9042    9044    9046    9047
         9049    9051    9056    9057    9065    9077    9082    9083    9085    9090    9092    9097    9099    9101    9102
         9104    9106    9111    9112    9121    9126    9131    9132    9134    9138    9140    9142    9143    9149    9156
         9157    9158    9159    9160    9161    9162    9166    9169    9177    9184    9186    9188    9189    9190    9197
         9200    9202    9203    9204    9207    9211    9213    9226    9228    9241    9242    9252    9253    9261    9262
         9263    9264    9265    9266    9267    9269    9303    9304    9309    9313    9332    9334    9335    9344    9345
         9346    9373    9374    9375    9396    9404    9432    9446    9455    9463    9478    9484    9522    9523    9525
         9529    9545    9546    9553    9561    9562    9563    9567    9568    9570    9577    9578    9579    9640    9670
         9674    9675    9679    9682    9686    9687    9688    9691    9694    9697    9698    9699    9700    9701    9708
         9714    9715    9716    9717    9722    9743    9744    9745    9746    9747    9751    9754    9755    9756    9757
         9758    9762    9769    9770    9772    9773    9775    9777    9778    9782    9792    9800    9813    9814    9815
         9816    9821    9822    9823    9824    9832    9840    9841    9844    9845    9849    9850    9851    9854    9855
         9856    9860    9861    9874    9879    9880    9943    9951    9952    9953    9954    9968    9986    9987    9989
         9991    9992   10009   10010   10013   10016   10018   10041   10042   10044   10045   10048   10061   10062   10063
        10066   10067   10148   10156   10159   10160   10161   10166   10173   10176   10179   10180   10188   10189   10190
        10195   10200   10206   10209   10214   10227   10254   10257   10258   10259   10260   10266   10270   10271   10275
        10281   10282   10283   10290   10291   10292   10293   10296   10297   10298   10305   10313   10314   10315   10316
```

10324	10327	10328	10329	10330	10338	10339	10343	10349	10350	10351	10358	10359	10360	10361
10364	10365	10366	10373	10384	10385	10386	10387	10392	10395	10396	10397	10398	10403	10404
10405	10413	10421	10426	10429	10436	10440	10442	10445	10454	10455	10456	10458	10469	10479
10480	10481	10483	10489	10498	10499	10500	10501	10507	10510	10511	10512	10513	10517	10529
10530	10531	10532	10543	10544	10545	10547	10555	10556	10557	10558	10566	10570	10572	10574
10575	10576	10577	10584	10592	10609	10613	10614	10620	10621	10630	10633	10634	10636	10652
10653	10654	10655	10656	10661	10668	10673	10676	10680	10682	10684	10685	10686	10687	10690
10691	10696	10698	10700	10701	10702	10705	10706	10711	10713	10715	10725	10726	10727	10728
10729	10730	10732	10733	10734	10735	10736	10759	10768	10773	10774	10777	10778	10779	10780
10784	10785	10786	10787	10813	10814	10815	10816	10817	10818	10819	10820	10821	10824	10829
10832	10833	10834	10845	10846	10847	10848	10858	10861	10862	10863	10866	10867	10868	10873
10876	10879	10880	10881	10882	10883	10884	10885	10890	10891	10892	10893	10894	10895	10896
10897	10905	10906	10909	10910	10911	10912	10917	10920	10921	10927	10928	10929	10930	10931
10932	10933	10934	10938	10940	10941	10942	10943	10948	10949	10950	10951	10952	10957	10958
10959	10960	10961	11023	11028	11030	11031	11034	11035	11039	11040	11043	11044	11048	11049
11050	11051	11052	11053	11057	11058	11059	11060	11061	11071	11072	11073	11074	11075	11080
11081	11082	11083	11084	11085	11092	11093	11094	11095	11096	11097	11100	11101	11102	11103
11104	11117	11118	11121	11122	11123	11124	11128	11131	11134	11136	11147	11148	11149	11150
11151	11152	11153	11154	11155	11156	11157	11158	11159	11160	11161	11162	11166	11170	11174
11178	11183	11188	11189	11190	11191	11192	11193	11194	11195	11199	11200	11201	11202	11203
11204	11209	11210	11211	11212	11213	11214	11215	11216	11217	11218	11222	11226	11230	11234
11238	11242	11243	11244	11245	11246	11247	11248	11249	11250	11251	11252	11256	11257	11258
11259	11260	11261	11262	11263	11264	11270	11273	11276	11284	11287	11293	11303	11308	11309
11322	11327	11332	11337	11338	11340	11343	11345	11355	11357	11358	11359	11379	11382	11387
11388	11389	11390	11401	11406	11409	11416	11455	11457	11458	11465	11471	11477	11478	11480
11483	11490	11493	11500	11502	11508	11509	11510	11557	11579	11584	11598	11599	11606	11607
11609	11610	11617	11627	11628	11633	11634	11638	11640	11641	11649	11650	11651	11655	11656
11666	11670	11673	11676	11682	11687	11690	11696	11699	11703	11706	11710	11713	11729	11742
11743	11745	11748	11750	11751	11754	11755	11758	11761	11792	11793	11797	11801	11813	11825
11847	11873	11892	11897	11946	11953	11954	11955	11956	11957	11982	11986	11997	12000	12001
12003	12004	12005	12013	12020	12023	12028	12033	12044	12045	12046	12047	12048	12052	12053
12054	12069	12079	12089	12099	12103	12104	12111	12112	12123	12130	12132	12140	12142	12146
12152	12177	12179	12186	12190	12192	12196	12214	12225	12230	12237	12251	12257	12280	12287
12290	12292	12293	12294	12322	12323	12327	12334	12337	12339	12350	12352	12354	12361	12365
12374	12379	12382	12389	12391	12393	12396	12397	12411	12412	12419	12444	12454	12476	12477
12478	12490	12491	12492	12493	12494	12495	12496	12539	12540	12541	12542	12543	12544	12555
12559	12561	12564	12569	12574	12577	12578	12583	12587	12588	12599	12600	12602	12603	12605
12606	12608	12609	12617	12625	12627	12632	12633	12634	12635	12636	12637	12642	12643	12644
12645	12646	12647	12649	12650	12651	12652	12653	12654	12660	12663	12668	12669	12670	12671
12672	12673	12675	12678	12682	12683	12684	12685	12686	12695	12700	12709	12710	12712	12713
12714	12715	12716	12717	12718	12719	12720	12721	12722	12723	12724	12725	12726	12732	12742
12743	12745	12746	12754	12755	12756	12757	12759	12762	12766	12784	12794	12797	12799	12800
12801	12802	12803	12804	12808	12810	12811	12819	12821	12822	12831	12834	12835	12836	12880
12897	12900	12901	12927	12928	12938	12941	12942	12963	12964	12965	12970	12972	12973	12974
12975	12976	12977	12980	12982	12983	13022	13051	13053	13057	13059	13063	13065	13090	13104
13106	13108	13113	13115	13120	13134	13141	13146	13154	13157	13162	13167	13179	13181	13183
13188	13194	13195	13206	13211	13213	13215	13220	13225	13227	13250	13252	13254	13259	13266
13274	13300	13312	13319	13322	13331	13348	13358	13361	13388	13427	13428	13429	13430	13431
13444	13448	13455	13459	13463	13473	13486	13500	13512	13561	13570	13579	13591	13593	13594
13595	13598	13610	13611	13613	13615	13624	13625	13626	13627	13629	13630	13631	13632	13633
13634	13641	13647	13650	13653	13668	13669	13671	13672	13673	13674	13675	13677	13681	13703
13704	13705	13706	13707	13708	13718	13719	13720	13721	13722	13723	13728	13760	13761	13763
13764	13765	13770	13790	13791	13792	13793	13794	13795	13796	13797	13799	13800	13801	13802
13803	13804	13805	13806	13808	13809	13810	13811	13812	13813	13814	13815	13817	13818	13819

```
            13820  13821  13822  13823  13824  13826  13827  13828  13829  13830  13831  13832  13833  13835  13836
            13837  13838  13839  13840  13841  13842  13877  13882  13911  13916  13921  13926  13931  13938  13940
            13941  13943  13944  13947  13949  13955  13961  13963  13968  13976  13985  13992  14000  14008  14015
            14034  14036  14040  14044  14046  14072  14074  14075  14076  14078  14098  14099  14101  14103  14104
            14105  14108  14118  14120  14121  14122  14146  14148  14170  14191  14192  14194  14195  14196  14201
            14209  14210  14212  14226  14227  14229  14230  14242  14243  14245  14246  14247  14248  14254  14266
            14267  14269  14270  14271  14278  14279  14281  14282  14286  14287  14299  14300  14302  14303  14307
            14313  14318  14319  14320  14332  14333  14334  14335  14336  14337  14341  14343  14350  14351  14352
            14353  14354  14355  14364  14365  14366  14367  14368  14369  14370  14371  14372  14376  14377  14378
            14405  14409  14410  14422  14423  14424  14425  14430  14432  14434  14436  14437  14443  14444  14445
            14449  14450  14451  14452  14455  14456  14460  14462  14465  14471  14472  14473  14496  14499  14508
            14509  14511  14512  14513  14518  14523  14527  14535  14541  14550  14557  14566  14567  14568  14569
            14573  14579  14580  14581  14589  14590  14591  14595  14596  14597  14601  14602  14603  14607  14608
            14609  14613  14614  14615  14619  14620  14621  14625  14626  14627  14631  14632  14633  14637  14638
            14639  14657  14668  14669  14672  14673  14679  14691  14695  14709  14710  14717  14719  14745  14746
            14750  14766  14767  14778  14780  14799  14806  14812  14813  14835  14837  14838  14839  14840  14843
            14844  14845  14848  14849  14851  14858  14859  14863  14868  14869  14884  14887  14888  14920  14921
            14933  14957  14964  14965  14967  15001  15002  15003  15007  15030  15039  15040  15041  15042  15043
            15044  15054  15055  15056  15057  15058  15059  15083  15094  15099  15106  15107  15123  15127  15128
            15129  15130  15131  15132  15133  15138  15157  15185  15191  15203  15204  15205  15208  15210  15226
            15230  15231  15285  15301  15306  15307  15308  15311  15317  15319  15320  15321  15324  15330  15332
            15333  15334  15337  15340  15341  15345  15346  15348  15349  15351  15354  15355  15359  15360  15362
            15363  15377  15378  15382  15383  15385  15388  15389  15398  15404  15417  15419  15420  15421  15433
            15444  15445  15448  15449  15478  15492  15493  15495  15509  15534  15579  15582  15585  15588  15591
            15594  15597  15600  15603  15606  15609  15612  15615  15618  15621  15624  15627  15630  15633  15636
            15637  15640  15643  15644  15647  15650  15651  15654  15657  15658  15661  15664  15665  15668  15671
            15672  15675  15678  15679  15682  15685  15686  15689  15692  15693  15696  15699  15700  15703  15706
            15707  15710  15713  15714  15717  15720  15721  15724  15727  15728  15731  15734  15735  15738  15741
            15742  15745  15748  15751  15754  15764  15765  15768  15781  15789  15791  20029  20032  20035  20038
            20043  20045  20050  20052  20055  20056  20062  20067  20068  20073  20076  20084  20085  20089  20092
            20093  20096  20101  20104  20107  20110  20115  20117  20122  20124  20127  20128  20134  20139  20140
            20145  20148  20156  20159  20164  20167  20280  20286  20291  20297  20308  20314  20322  20329  20330
            20346  20352  20359  20364  20373  20377  20385  20389  20395  20400  20401  20564  20567  20572  20575
            20578  20649  20659  20666  20772  20780  20785  20950  20960  20976  21008  21017  21028  21042  21049
            21188  21189  21190  21193  21195  21197  21198  21203  21209  21214  21220  21225  21231  21236  21239
            21241  21245  21246  21247  21248  21249  21251  21252  21262  21263  21264  21265  21266  21307  21309
            21310  21311  21312  21313  21314  21315  21316  21318  21319  21320  21321  21322  21323  21324  21325
            21327  21328  21329  21330  21331  21332  21333  21334  21340  21341  21345  21346  21350  21351  21363
            21364  21365  21366  21367  21369  21370  21380  21381  21390  21402  21403  21404  21405  21406  21407
            21409  21410  21421  21422  21423  21432  21444  21445  21446  21447  21448  21449  21451  21452  21463
            21464  21465  21474  21475  21476  21499  21500  21501  21502  21503  21504  21507  21508  21509  21510
            21511  21512
MOVB         6919   9012   9017   9021   9060   9063   9068   9071   9075   9115   9119   9124   9216   9219   9231
             9234   9316   9318   9319   9371   9395   9410   9426   9434   9445   9450   9460   9470   9480   9537
             9542   9544   9576   9595   9597   9612   9617   9633   9635   9659   9664   9729   9732   9733   9734
             9833   9838   9846   9961   9993   9994   9996  10003  10006  10011  10014  10022  10447  10466  10485
            10563  10582  10608  11512  11620  11622  11671  11672  11674  11677  11683  11688  12082  12092  12107
            12148  12181  12203  12208  12210  12239  12240  12248  12260  12262  12271  12302  12316  12318  12335
            12355  12369  12405  12407  12943  12944  13276  13310  14132  14735  14906  14943  14981  15021  15060
            15081  15086  15091  15097  15102  15110  15120  15136  15147  15150  15163  15179  15182  15221  15384
            15429  15447  15512  15521  15525  15537  15772  15776  15778  15784  15786  20275  20281  20292  20303
            20309  20317  20323  20325  20341  20347  20355  20360  20370  20374  20382  20386  20392  20396  20398
            20644  20654  20662  20769  20777  20783  20945  20955  20970  20972  21003  21014  21026  21035  21036
            21262  21263  21264  21265
```

```
NEG     15148  15180  21262
NOP      7061   7326   7327   7328  11325  11326  11330  11331  11335  11336  11736  11737  11738  12695  12709
        12710  12780  12792  12905  12908  13397  13398  13399  13624  13625  13626  13627  13630  13631  13632
        13633  21378  21379  21419  21420  21461  21462
RESET   13395
ROL     10185  10186  10192  10193  10197  10198  11762  11763  11764  11765  11766  14802  14803  14807  14808
        14810  14811  15152  15154  15155  15156  15158  15184  15186
ROR      9979   9980
RTI     11284  11293  14107  14124  14163  14220  14528  21262  21263  21264  21265  21266
RTS      6919   8867   8885   9032   9086   9135   9163   9270   9300   9336   9376   9457   9466   9472   9487
         9489   9519   9564   9580   9666   9818   9826   9834   9882  10001  10068  10261  10331  10399  10415
        10637  10775  10782  10789  10924  10935  10945  10954  10963  11139  11163  12362  12458  12466  12467
        12534  13015  13456  13464  13470  13478  13483  13492  13497  13504  13509  13515  13538  13562  13682
        13729  13759  13771  13844  13901  14047  14150  14314  14321  14324  14344  14357  14381  14417  14446
        14474  14544  14560  14582  14592  14598  14604  14610  14616  14622  14628  14634  14640  14662  14711
        14720  14761  14769  14781  14790  14814  14898  14939  14944  14955  14959  14972  14992  15006  15047
        15134  15168  15196  15232  15268  15271  15274  15303  15310  15323  15336  15365  15435  15450  15499
        15527  15542  15583  15589  15595  15601  15607  15613  15619  15625  15631  15638  15645  15652  15659
        15666  15673  15680  15687  15694  15701  15708  15715  15722  15729  15736  15743  15749  15755  15793
        20033  20039  20046  20053  20063  20074  20077  20090  20097  20105  20111  20118  20125  20135  20146
        20149  20160  20168  20287  20298  20315  20334  20353  20365  20378  20390  20405  20568  20576  20579
        20650  20660  20667  20773  20781  20789  20951  20961  20977  21010  21018  21029  21043  21050  21199
        21250  21264  21265  21505  21513
SOB     15125
SUB      6919   8870   9000   9048   9100   9103   9107   9154   9155   9205   9260   9735   9736  10012  10571
        10610  10699  10714  11874  12034  12040  12529  12532  12557  12601  12607  12626  12729  13003  13005
        13011  13013  13302  14073  14102  14119  14294  14556  15206  15211  15386  20036  20037  20051  20058
        20072  20087  20095  20108  20109  20123  20130  20144  20327  20331  20399  20402  20974  21038  21192
        21194  21196  21238  21240  21244  21262
SWAB    11686  11806  11818  11830  12124  12231  12281  12383  13119  13275  13279  13452  13476  13490
TRAP    21265
TST      6919   8865   9024   9078   9127   9206   9268   9295   9306   9364   9475   9514   9526   9540   9556
         9593   9614   9631   9648   9656   9704   9706   9710   9720   9741   9752   9795   9801   9805   9830
         9847   9857   9864   9866   9959  10028  10039  10051  10164  10218  10221  10225  10229  10232  10234
        10238  10246  10251  10288  10301  10303  10306  10310  10318  10356  10369  10371  10374  10378  10389
        10411  10438  10449  10535  10549  10564  10578  10590  10600  10604  10616  10623  10659  10693  10708
        10722  10748  10753  10836  10870  11068  11318  11319  11320  11350  11384  11392  11399  11495  11515
        11520  11575  11582  11593  11623  11629  11642  11691  11719  11775  11795  11841  11856  11893  11904
        11934  11947  11967  11993  11998  12015  12024  12057  12076  12080  12090  12101  12105  12143  12150
        12253  12265  12298  12308  12311  12313  12345  12400  12402  12424  12562  12614  12620  12698  12703
        12727  12752  12829  12873  12881  12902  12946  12949  12951  12953  12956  12968  12978  12987  13030
        13034  13067  13071  13100  13122  13174  13190  13204  13221  13236  13247  13257  13264  13268  13283
        13304  13313  13320  13328  13335  13339  13346  13354  13356  13376  13409  13411  13413  13587  13606
        13618  13639  13645  13646  13648  13649  13651  13654  13656  13657  13659  13660  13662  13663  13664
        13676  13694  13738  13740  13783  13786  13857  13859  13883  13885  13890  13892  13907  13945  13950
        13952  13981  14005  14021  14028  14030  14038  14079  14080  14089  14109  14110  14213  14216  14234
        14256  14257  14295  14428  14441  14442  14454  14469  14470  14525  14542  14543  14558  14559  14571
        14577  14578  14660  14841  14856  14861  14866  14871  14890  14985  15217  15222  15266  15272  15394
        15415  15479  15490  15766  15770  15782  20041  20048  20059  20065  20070  20113  20120  20131  20137
        20142  21039  21262  21264  21265  21300  21304  21386  21428  21470  21484  21485
TSTB     6919   9378   9581   9650   9836   9999  10036  10053  10407  10475  10496  10541  10551  14130  14733
        14904  14941  14979  15019  15392  15510  20963  20965  20968  21024  21263  21264
WAIT    14539
.ASCII   7826   7828   7830   7832   7834   7836   7838   7840   7842   7844   7846   7848   7850   7852   7854
```

```
          7856  7858  7860  7862  7864  7866  7868  7870  7872  7874  7876  7878  7880  7882  7884
          7886  7888  7890  7892  7894  7896  7898  7900  7902  7904  7906  7908  7910  7912  7914
          7916  7918  7920  7922  7924  7926  7928  7930  7932  7934  7936  7938  7940  7942  7944
          7946  7948  7950  7952  7954  7956  7958  7960  7962  7964  7966  7968  7970  7972  7974
          7976  7978  7980  7982  7984  7986  7988  7990  7992  7994  7996  7998  8000  8002  8004
          8006  8008  8010  8012  8014  8017  8019  21262
.ASCIZ    8666  8667  8668  8669  8670  8671  8672  8673  8674  8675  8676  8677  8678  8679  8680
          8681  8682  8683  8684  8685  8686  8687  8688  8689  8690  8691  8692  8694  8695  8696
          8697  8698  8699  8700  8701  8702  8703  8704  8705  8706  8707  8708  8709  8710  8711
          8712  8713  8714  8715  8716  8717  8718  8719  8720  8721  8722  8723  8724  8725  8726
          8727  8728  8729  8730  8731  8732  8733  8734  8735  8736  8737  8738  8739  8740  8741
          8742  8743  8744  8745  8746  8747  8748  8749  8750  8751  8752  8753  8754  8755  8756
          8757  8758  8759  8760  8761  8762  8763  8764  8765  8766  8767  8768  8769  8770  8771
          8772  8773  8774  8775  8776  8777  8779  8784  8785  8786  8787  8789  8794  8795  8796
          8797  8801  8802  8804  8809  8810  8811  8812  8813  21262 21263 21266
.BLKB      7371  7373  10070 21263 21566
.BLKW      7341  7394  8888  10968 10969 10970 10971 10972 10974 10984 10985 10986 10987 10988 10989
          10990 10991 10992 11004 15237 21556 21558
.BYTE      6918  6919  7223  7224  7225  7226  7227  7228  7229  7230  7231  7232  7233  7234  7235
          7236  7237  7238  7239  7240  7241  7242  7243  7244  7245  7246  7247  7248  7249  7250
          7251  7252  7253  7254  7255  7256  7257  7258  7259  7260  7261  7262  7263  7264  7265
          7266  7267  7268  7269  7270  7271  7272  7370  7372  7377  7378  7379  7380  7381  7382
          7383  7384  7401  7402  7403  7404  7769  7770  7771  7772  7773  7774  7775  7776  7777
          7778  7779  7780  7781  7782  7783  7784  7785  7786  7787  7788  7789  7790  7791  7792
          7793  7794  7795  7796  7797  7798  7799  7800  7801  7802  7803  7804  7805  7806  7807
          7808  7809  7810  7811  7812  7813  7814  7815  7816  7817  7818  9915  9916  9917  9918
          9919  9920  9921  9922  9923  9924  9925  9926  9927  9928  9929  9930  9931  9932  9933
          9934  10109 10110 10111 10112 10113 10114 10115 10116 10117 10118 10119 10120 10121 10122
         10123 10124 10125 10126 10127 10128 10129 10130 10131 10132 10133 10134 10135 10136 10137
         10138 10139 15170 15171 15172 15173 15452 15453 15454 15455 15458 15459 15460 15461 15462
         15463 15464 15465 15466 15467 15468 15469 15470 15471 15472 15473 21263 21264
.DSABL    21263
.ENABL        4  6748  21263
.END      21571
.ENDC      6292  6747  6864  6865  6868  6897  6902  6907  6909  6910  6913  6914  6917  6918  6919
          6920  7042  7054  8016  8039  8045  8058  8064  8086  8090  8101  8105  8110  8113  8123
          8129  8142  8145  8149  8152  8163  8166  8174  8177  8202  8209  8224  8229  8250  8256
          8286  8780  8783  8790  8793  8800  8805  8808  11275 11281 11284 11293 11308 11316 11322
         11341 11360 11377 11386 11394 11401 11406 11409 11416 11455 11457 11458 11471 11480 11483
         11493 11501 11527 11552 11556 11561 11584 11587 11592 12756 12779 12819 12821 12834 12907
         12970 12971 12980 12982 12983 12992 12995 13342 13345 13366 13370 13384 13387 13391 13394
         13403 13406 13426 13628 13760 13763 13764 13770 13942 13956 13959 13964 13967 13972 13980
         13986 13989 13993 13996 14004 14009 14012 14016 14019 14064 14074 14075 14098 14103 14104
         14120 14121 14191 14194 14195 14226 14229 14242 14245 14246 14247 14266 14269 14270 14278
         14281 14299 14302 14325 14476 14491 14508 14511 14512 14686 14689 14767 14835 14837 14838
         14839 14840 14843 14849 14851 14858 14859 14863 14868 14869 14884 14887 14888 15306 15317
         15319 15330 15332 15337 15351 15389 15417 15419 15420 15433 15448 15579 15582 15585 15588
         15591 15594 15597 15600 15603 15606 15609 15612 15615 15618 15621 15624 15627 15630 15633
         15636 15640 15643 15647 15650 15654 15657 15661 15664 15668 15671 15675 15678 15682 15685
         15689 15692 15696 15699 15703 15706 15710 15713 15717 15720 15724 15727 15731 15734 15738
         15741 15745 15748 15751 15754 15764 15765 15768 15781 15789 15791 21257 21262 21263 21264
         21265 21266 21267 21380 21422 21464 21549 21552
.EQUIV    6869
.EVEN     6918  6919  8848  10140 12999 15049 15796 21266 21570
```

.IF 5631 6293 6863 6864 6866 6897 6898 6903 6909 6910 6912 6913 6915 6918 6919
6920 7031 7043 7825 8034 8040 8053 8059 8083 8087 8098 8102 8108 8111 8118
8124 8140 8143 8147 8150 8161 8164 8172 8175 8196 8203 8220 8225 8245 8251
8259 8778 8781 8788 8791 8798 8803 8806 11272 11277 11284 11293 11308 11312 11317
11322 11356 11370 11383 11391 11401 11406 11408 11409 11416 11455 11457 11458 11471 11480
11483 11493 11517 11528 11553 11558 11578 11584 11588 12756 12774 12819 12821 12834 12904
12967 12970 12980 12982 12983 12990 12993 13340 13343 13362 13368 13381 13385 13389 13392
13400 13404 13408 13623 13760 13763 13764 13770 13939 13954 13957 13962 13965 13970 13978
13984 13987 13991 13994 14002 14007 14010 14014 14017 14051 14074 14075 14098 14103 14104
14120 14121 14154 14191 14194 14195 14226 14229 14242 14245 14246 14247 14266 14269 14270
14278 14281 14299 14302 14419 14477 14508 14511 14512 14684 14687 14767 14835 14837 14838
14839 14840 14843 14849 14851 14858 14859 14863 14868 14869 14884 14887 14888 15306 15317
15319 15330 15332 15337 15351 15389 15417 15419 15420 15433 15448 15579 15582 15585 15588
15591 15594 15597 15600 15603 15606 15609 15612 15615 15618 15621 15624 15627 15630 15633
15636 15640 15643 15647 15650 15654 15657 15661 15664 15668 15671 15675 15678 15682 15685
15689 15692 15696 15699 15703 15706 15710 15713 15717 15720 15724 15727 15731 15734 15738
15741 15745 15748 15751 15754 15764 15765 15768 15781 15789 15791 15893 21257 21262 21263
21264 21265 21266 21380 21422 21464 21547 21550

.IFF 6910 6913 6918 6919 6920 11284 11293 11308 11322 11401 11406 11409 11416 11455 11457
11458 11471 11480 11483 11493 11584 12756 12819 12821 12834 12970 12980 12982 12983 13760
13763 13764 13770 14074 14075 14098 14103 14104 14120 14121 14191 14194 14195 14226 14229
14242 14245 14246 14247 14266 14269 14270 14278 14281 14299 14302 14508 14511 14512 14767
14835 14837 14838 14839 14840 14843 14849 14851 14858 14859 14863 14868 14869 14884 14887
14888 15306 15317 15319 15330 15332 15337 15351 15389 15417 15419 15420 15433 15448 15579
15582 15585 15588 15591 15594 15597 15600 15603 15606 15609 15612 15615 15618 15621 15624
15627 15630 15633 15636 15640 15643 15647 15650 15654 15657 15661 15664 15668 15671 15675
15678 15682 15685 15689 15692 15696 15699 15703 15706 15710 15713 15717 15720 15724 15727
15731 15734 15738 15741 15745 15748 15751 15754 15764 15765 15768 15781 15789 15791 21257
21262 21263 21264 21265 21266 21380 21422 21464

.IFT 19857 21263

.IFTF 19845 21152 21263

.IIF 6864 6897 6918 11284 11293 11308 11322 11401 11406 11409 11416 11455 11457 11458 11471
11480 11483 11493 11584 12756 12819 12821 12834 12970 12980 12982 12983 13760 13763 13764
13770 14074 14075 14098 14103 14104 14120 14121 14191 14194 14195 14226 14229 14242 14245
14246 14247 14266 14269 14270 14278 14281 14299 14302 14508 14511 14512 14767 14835 14837
14838 14839 14840 14843 14849 14851 14858 14859 14863 14868 14869 14884 14887 14888 15306
15317 15319 15330 15332 15337 15351 15389 15417 15419 15420 15433 15448 15579 15582 15585
15588 15591 15594 15597 15600 15603 15606 15609 15612 15615 15618 15621 15624 15627 15630
15633 15636 15640 15643 15647 15650 15654 15657 15661 15664 15668 15671 15675 15678 15682
15685 15689 15692 15696 15699 15703 15706 15710 15713 15717 15720 15724 15727 15731 15734
15738 15741 15745 15748 15751 15754 15764 15765 15768 15781 15789 15791 21262 21263 21264
21265 21380 21422 21464

.IRP 6909 6919 11308 11322 11401 11406 11409 11416 11455 11457 11458 11471 11480 11483 11493
11584 12756 12819 12821 12834 12970 12980 12982 12983 13760 13763 13764 13770 14074 14075
14098 14103 14104 14120 14121 14191 14194 14195 14226 14229 14242 14245 14246 14247 14266
14269 14270 14278 14281 14299 14302 14508 14511 14512 14767 14835 14837 14838 14839 14840
14843 14849 14851 14858 14859 14863 14868 14869 14884 14887 14888 15306 15317 15319 15330
15332 15337 15351 15389 15417 15419 15420 15433 15448 15579 15582 15585 15588 15591 15594
15597 15600 15603 15606 15609 15612 15615 15618 15621 15624 15627 15630 15633 15636 15640
15643 15647 15650 15654 15657 15661 15664 15668 15671 15675 15678 15682 15685 15689 15692
15696 15699 15703 15706 15710 15713 15717 15720 15724 15727 15731 15734 15738 15741 15745
15748 15751 15754 15764 15765 15768 15781 15789 15791 21262 21263 21264

.LIST 2 5625 5629 6858 6862 6869 6897 6909 6918 11284 11293 11298 11299 11308 11322
11401 11406 11409 11416 11455 11457 11458 11471 11480 11483 11493 11584 12756 12819 12821

```
            12834   12970   12980   12982   12983   13760   13763   13764   13770   14074   14075   14098   14103   14104   14120
            14121   14191   14194   14195   14226   14229   14242   14245   14246   14247   14266   14269   14270   14278   14281
            14299   14302   14508   14511   14512   14767   14835   14837   14838   14839   14840   14843   14849   14851   14858
            14859   14863   14868   14869   14884   14887   14888   15306   15317   15319   15330   15332   15337   15351   15389
            15417   15419   15420   15433   15448   15579   15582   15585   15588   15591   15594   15597   15600   15603   15606
            15609   15612   15615   15618   15621   15624   15627   15630   15633   15636   15640   15643   15647   15650   15654
            15657   15661   15664   15668   15671   15675   15678   15682   15685   15689   15692   15696   15699   15703   15706
            15710   15713   15717   15720   15724   15727   15731   15734   15738   15741   15745   15748   15751   15754   15764
            15765   15768   15781   15789   15791   21259   21261   21263   21265   21271   21272   21380   21422   21464
.MACRO        61     103     187     330     509     916     955    1027    1191    1257    1289    1313    1427    1458    1489
            1537    1549    1596    1632    1665    1678    1699    1712    1736    1790    1857    1903    1940    1987    2020
            2050    2106    2114    2173    2408    2654    2849    2936    3084    3180    3257    3364    3766    3857    3932
            4034    4186    4261    4314    4473    4511    4574    4671    4755    4794    4856    4894    4938    5041    5085
            5341    5387    5432    5516    6751    6792    6804    6809    6820    6834    6847   11284   11293   21265
.MCALL      6859    6860    6861    6869   11284   11293   11308   11322   11401   11406   11409   11416   11455   11457   11458
           11471   11480   11483   11493   11584   12756   12819   12821   12834   12970   12980   12982   12983   13760   13763
           13764   13770   14074   14075   14098   14103   14104   14120   14121   14191   14194   14195   14226   14229   14242
           14245   14246   14247   14266   14269   14270   14278   14281   14299   14302   14508   14511   14512   14767   14835
           14837   14838   14839   14840   14843   14849   14851   14858   14859   14863   14868   14869   14884   14887   14888
           15306   15317   15319   15330   15332   15337   15351   15389   15417   15419   15420   15433   15448   15579   15582
           15585   15588   15591   15594   15597   15600   15603   15606   15609   15612   15615   15618   15621   15624   15627
           15630   15633   15636   15640   15643   15647   15650   15654   15657   15661   15664   15668   15671   15675   15678
           15682   15685   15689   15692   15696   15699   15703   15706   15710   15713   15717   15720   15724   15727   15731
           15734   15738   15741   15745   15748   15751   15754   15764   15765   15768   15781   15789   15791   21380   21422
           21464
.MEXIT      6918   11308   11322   11401   11406   11409   11416   11455   11457   11458   11471   11480   11483   11493   11584
           12756   12819   12821   12834   12970   12980   12982   12983   13760   13763   13764   13770   14074   14075   14098
           14103   14104   14120   14121   14191   14194   14195   14226   14229   14242   14245   14246   14247   14266   14269
           14270   14278   14281   14299   14302   14508   14511   14512   14767   14835   14837   14838   14839   14840   14843
           14849   14851   14858   14859   14863   14868   14869   14884   14887   14888   15306   15317   15319   15330   15332
           15337   15351   15389   15417   15419   15420   15433   15448   15579   15582   15585   15588   15591   15594   15597
           15600   15603   15606   15609   15612   15615   15618   15621   15624   15627   15630   15633   15636   15640   15643
           15647   15650   15654   15657   15661   15664   15668   15671   15675   15678   15682   15685   15689   15692   15696
           15699   15703   15706   15710   15713   15717   15720   15724   15727   15731   15734   15738   15741   15745   15748
           15751   15754   15764   15765   15768   15781   15789   15791   21380   21422   21464
.NLIST         1       3    5626    6749    6857    6869    6897    6909    6918   11284   11293   11296   11297   11308   11322
           11401   11406   11409   11416   11455   11457   11458   11471   11480   11483   11493   11584   12756   12819   12821
           12834   12970   12980   12982   12983   13760   13763   13764   13770   14074   14075   14098   14103   14104   14120
           14121   14191   14194   14195   14226   14229   14242   14245   14246   14247   14266   14269   14270   14278   14281
           14299   14302   14508   14511   14512   14767   14835   14837   14838   14839   14840   14843   14849   14851   14858
           14859   14863   14868   14869   14884   14887   14888   15306   15317   15319   15330   15332   15337   15351   15389
           15417   15419   15420   15433   15448   15579   15582   15585   15588   15591   15594   15597   15600   15603   15606
           15609   15612   15615   15618   15621   15624   15627   15630   15633   15636   15640   15643   15647   15650   15654
           15657   15661   15664   15668   15671   15675   15678   15682   15685   15689   15692   15696   15699   15703   15706
           15710   15713   15717   15720   15724   15727   15731   15734   15738   15741   15745   15748   15751   15754   15764
           15765   15768   15781   15789   15791   21258   21260   21263   21265   21269   21270   21380   21422   21464
.PAGE       6921    6933    6943    7000    7308    7353    7386    7397    7599    7631    7664    7696    7726    7764    8025
            8659    8816    8886    8985    9088    9136    9182    9209    9224    9239    9250    9490    9645    9668    9883
           10141   10264   10332   10400   10419   10666   10925   10965   11012   11267   13573   13683   13773   14153   14475
           14642   14822   15834   15892   15937   15975   16050   16087   16212   16298   16337   16420   16460   16535   16570
           16699   16783   16821   16905   16943   17025   17104   17324   17398   17440   17549   17589   17801   18016   18275
           18492   18572   18614   18656   18701   18781   18826   18871   18919   19006   19132   19385   19546   19724   19846
           21355   21394   21436   21479
.REM        5632
```

PDP-11 CIS INST EXERCISER MACY11 27(655) 25-MAR-81 12:25 PAGE 168-71 SEQUENCE 449
CZKEEC.P11 CROSS REFERENCE TABLE

.REPT 6897
.SBTTL 6869 6897 6910 6913 6918 6919 6922 6925 6934 6944 6978 7001 7028 7091 7309
7354 7367 7398 7546 7600 7632 7665 7697 7727 7765 7820 8026 8289 8660 8817
8819 8850 8887 8986 9034 9089 9137 9183 9210 9225 9240 9251 9272 9491 9646
9669 9937 10142 10265 10333 10420 10667 10800 10926 10966 11013 11146 11268 11284 11293
13574 13684 13774 14155 14492 14643 14823 15575 15801 15829 15835 15864 15894 16013 16125
16254 16376 16499 16608 16739 16861 16983 17064 17178 17288 17361 17512 17625 17842 18097
18316 18533 18740 18958 19084 19207 19547 19853 21262 21263 21264 21265 21266 21357 21553
21563
.TITLE 6864
.WORD 6897 6910 6913 6918 6919 6926 6927 6928 6929 6938 6939 6940 6941 6948 6949
6950 6951 6952 6953 6954 6955 6956 6957 6958 6959 6960 6961 6962 6963 6964
6965 6966 6967 6968 6969 6970 6971 6972 6973 6974 6975 6982 6983 6984 6985
6986 6987 6988 6989 6990 6991 6992 6993 6994 6995 6996 6997 7005 7006 7007
7008 7009 7010 7011 7012 7013 7014 7015 7016 7017 7018 7019 7020 7021 7022
7023 7024 7025 7032 7033 7034 7035 7036 7037 7038 7055 7057 7058 7059 7063
7064 7065 7066 7067 7068 7069 7080 7081 7082 7083 7084 7085 7086 7087 7088
7094 7095 7096 7097 7098 7099 7100 7101 7102 7103 7104 7105 7106 7107 7108
7109 7110 7111 7112 7113 7114 7115 7116 7117 7118 7119 7120 7121 7122 7123
7124 7125 7126 7127 7128 7129 7130 7131 7132 7133 7134 7135 7136 7137 7138
7139 7140 7141 7142 7143 7144 7145 7146 7147 7148 7149 7150 7151 7152 7153
7154 7155 7156 7157 7158 7159 7160 7161 7162 7163 7164 7165 7166 7167 7169
7170 7172 7173 7174 7175 7176 7177 7178 7179 7180 7181 7182 7183 7184 7185
7186 7187 7188 7189 7190 7191 7192 7193 7194 7195 7196 7197 7198 7199 7200
7201 7202 7203 7204 7205 7206 7207 7208 7209 7210 7211 7212 7213 7214 7215
7216 7217 7218 7219 7220 7221 7273 7274 7275 7276 7277 7278 7279 7280 7281
7282 7283 7284 7285 7286 7287 7291 7292 7293 7294 7295 7296 7297 7298 7299
7300 7301 7302 7303 7304 7306 7307 7311 7312 7313 7314 7315 7316 7317 7318
7319 7320 7322 7323 7324 7325 7326 7327 7328 7329 7330 7331 7333 7334 7335
7336 7337 7338 7339 7340 7344 7345 7346 7347 7348 7349 7350 7356 7357 7358
7359 7360 7361 7362 7390 7391 7392 7393 7406 7407 7408 7410 7411 7412 7414
7415 7416 7418 7419 7420 7421 7422 7424 7425 7426 7428 7429 7430 7431 7432
7434 7435 7436 7438 7439 7440 7441 7442 7444 7445 7446 7448 7449 7450 7451
7452 7454 7455 7456 7457 7458 7459 7460 7461 7463 7464 7465 7466 7467 7468
7469 7470 7472 7473 7474 7475 7476 7477 7478 7479 7481 7482 7483 7484 7485
7486 7487 7488 7489 7490 7491 7492 7493 7494 7495 7496 7498 7499 7500 7501
7502 7503 7504 7505 7506 7507 7508 7509 7510 7511 7512 7513 7515 7516 7517
7518 7519 7520 7521 7522 7523 7524 7525 7526 7527 7528 7529 7530 7532 7533
7534 7536 7537 7538 7540 7541 7542 7543 7550 7551 7552 7553 7554 7555 7556
7557 7562 7563 7564 7565 7566 7567 7568 7572 7577 7578 7579 7580 7581 7582
7583 7588 7589 7590 7591 7592 7593 7594 7598 7603 7604 7605 7606 7607 7608
7609 7610 7611 7612 7613 7614 7615 7616 7617 7618 7619 7620 7621 7622 7623
7624 7625 7626 7627 7628 7629 7630 7635 7636 7637 7638 7639 7640 7641 7642
7643 7644 7645 7646 7647 7648 7649 7650 7651 7652 7653 7654 7655 7656 7657
7658 7659 7660 7661 7662 7668 7669 7670 7671 7672 7673 7674 7675 7676 7677
7678 7679 7680 7681 7682 7683 7684 7685 7686 7687 7688 7689 7690 7691 7692
7693 7694 7695 7700 7701 7702 7703 7704 7705 7706 7707 7708 7709 7710 7711
7712 7713 7714 7715 7716 7717 7718 7719 7720 7721 7722 7723 7724 7725 7730
7732 7733 7734 7735 7736 7737 7738 7739 7740 7741 7742 7743 7744 7745 7746
7747 7748 7749 7750 7751 7752 7753 7754 7755 7756 7757 7758 7759 7760 7761
7762 7763 7768 7827 7829 7831 7833 7835 7837 7839 7841 7843 7845 7847 7849
7851 7853 7855 7857 7859 7861 7863 7865 7867 7869 7871 7873 7875 7877 7879
7881 7883 7885 7887 7889 7891 7893 7895 7897 7899 7901 7903 7905 7907 7909
7911 7913 7915 7917 7919 7921 7923 7925 7927 7929 7931 7933 7935 7937 7939

7941	7943	7945	7947	7949	7951	7953	7955	7957	7959	7961	7963	7965	7967	7969
7971	7973	7975	7977	7979	7981	7983	7985	7987	7989	7991	7993	7995	7997	7999
8001	8003	8005	8007	8009	8011	8013	8015	8018	8020	8021	8022	8023	8024	8035
8036	8037	8038	8046	8047	8054	8055	8056	8057	8065	8066	8067	8068	8069	8070
8071	8072	8073	8074	8084	8085	8091	8092	8099	8100	8106	8107	8109	8114	8119
8120	8121	8122	8130	8131	8139	8141	8146	8148	8153	8154	8158	8159	8160	8162
8167	8171	8173	8178	8179	8180	8181	8182	8195	8197	8198	8199	8200	8201	8210
8211	8212	8213	8214	8219	8221	8222	8223	8230	8231	8232	8233	8234	8235	8244
8246	8247	8248	8249	8257	8258	8294	8295	8296	8297	8298	8299	8300	8301	8302
8303	8304	8305	8306	8307	8308	8309	8310	8311	8312	8313	8314	8315	8316	8317
8323	8324	8325	8326	8327	8328	8329	8330	8331	8332	8333	8334	8335	8336	8337
8338	8339	8340	8341	8342	8343	8344	8345	8346	8347	8354	8355	8356	8357	8358
8359	8360	8361	8362	8363	8364	8365	8366	8367	8368	8369	8370	8371	8372	8373
8374	8375	8376	8377	8378	8383	8384	8385	8386	8387	8388	8389	8390	8391	8392
8393	8394	8395	8396	8397	8398	8399	8400	8401	8402	8403	8404	8405	8406	8407
8414	8415	8416	8417	8418	8419	8420	8421	8422	8423	8424	8425	8426	8427	8428
8429	8430	8431	8432	8433	8434	8435	8441	8442	8443	8444	8445	8446	8447	8448
8449	8450	8451	8452	8453	8454	8455	8456	8457	8458	8459	8460	8461	8462	8463
8464	8473	8474	8475	8476	8477	8478	8479	8480	8481	8482	8483	8484	8485	8486
8487	8488	8489	8490	8491	8502	8503	8504	8505	8506	8507	8508	8509	8510	8511
8512	8513	8514	8515	8516	8517	8518	8519	8520	8521	8522	8523	8524	8525	8526
8527	8528	8529	8536	8537	8538	8539	8540	8541	8542	8543	8544	8545	8546	8547
8548	8549	8550	8551	8552	8553	8554	8555	8556	8557	8558	8559	8560	8567	8568
8569	8570	8571	8572	8573	8574	8575	8576	8577	8578	8579	8580	8581	8582	8583
8584	8585	8586	8587	8588	8589	8596	8597	8598	8599	8600	8601	8602	8603	8604
8605	8606	8607	8608	8609	8610	8611	8612	8613	8614	8615	8624	8625	8626	8627
8628	8629	8630	8631	8632	8633	8634	8635	8636	8637	8638	8639	8640	8646	8647
8648	8649	8650	8651	8652	8653	8654	8655	8656	8657	8658	8889	8890	8891	8892
8893	8894	8895	8896	8897	8898	8899	8900	8901	8902	8903	8904	8905	8906	8907
8908	8909	8910	8911	8912	8913	8914	8915	8916	8917	8918	8919	8920	8921	8922
8923	8924	8925	8926	8927	8928	8929	8930	8931	8932	8933	8934	8935	8936	8937
8938	8939	8940	8941	8942	8943	8944	8945	8946	8947	8948	8949	8950	8951	8952
8953	8954	8955	8956	8957	8958	8959	8960	8961	8962	8963	8964	8965	8966	8967
8968	8969	8970	8971	8972	8973	8974	8975	8976	8977	8978	8979	8980	8981	8982
8983	8984	9884	9885	9886	9887	9888	9889	9890	9891	9892	9893	9894	9895	9896
9897	9898	9899	9900	9901	9902	9903	9904	9905	9906	9907	9908	9909	9910	9911
9912	9913	9935	10069	10071	10072	10073	10074	10075	10076	10077	10078	10079	10080	10081
10082	10083	10084	10085	10086	10087	10088	10089	10090	10091	10092	10093	10094	10095	10096
10097	10098	10099	10100	10101	10102	10103	10104	10105	10106	10107	10108	10262	10263	10417
10418	10639	10640	10641	10642	10643	10644	10645	10646	10647	10791	10792	10793	10794	10795
10796	10797	10798	10973	10975	10976	10977	10978	10979	10980	10981	10982	10983	10993	10994
10995	10996	10997	10998	10999	11000	11001	11002	11003	11005	11006	11007	11008	11009	11010
11011	11141	11142	11143	11771	11772	11773	12785	14815	14816	14817	14818	14819	14820	14946
15546	15547	15548	15549	15550	15551	15552	15553	15554	15555	15556	15557	15558	15559	15560
15561	15562	15563	15564	15565	15566	15567	15568	15569	15570	15571	15572	15573	15804	15805
15806	15807	15808	15809	15810	15811	15812	15813	15814	15815	15816	15817	15818	15819	15820
15821	15822	15823	15824	15825	15832	15839	15840	15841	15842	15843	15844	15845	15846	15847
15848	15849	15850	15851	15852	15853	15854	15855	15856	15857	15858	15859	15860	15868	15869
15870	15871	15872	15873	15874	15875	15876	15877	15878	15879	15880	15881	15882	15883	15884
15885	15886	15887	15888	15889	15897	15898	15899	15900	15901	15902	15903	15904	15905	15906
15907	15908	15909	15910	15911	15912	15913	15914	15915	15916	15917	15918	15940	15941	15942
15943	15944	15945	15946	15947	15948	15949	15950	15951	15952	15953	15954	15955	15956	15957
15958	15959	15960	15961	15978	15979	15980	15981	15982	15983	15984	15985	15986	15987	15988
15989	15990	15991	15992	15993	15994	15995	15996	15997	15998	15999	16017	16018	16019	16020

16021	16022	16023	16024	16025	16026	16027	16028	16029	16030	16031	16032	16033	16034	16035
16036	16037	16038	16054	16055	16056	16057	16058	16059	16060	16061	16062	16063	16064	16065
16066	16067	16068	16069	16070	16071	16072	16073	16074	16075	16091	16092	16093	16094	16095
16096	16097	16098	16099	16100	16101	16102	16103	16104	16105	16106	16107	16108	16109	16110
16111	16112	16129	16130	16131	16132	16133	16134	16135	16136	16137	16138	16139	16140	16141
16142	16143	16144	16145	16146	16147	16148	16149	16150	16170	16171	16172	16173	16174	16175
16176	16177	16178	16179	16180	16181	16182	16183	16184	16185	16186	16187	16188	16189	16190
16191	16216	16217	16218	16219	16220	16221	16222	16223	16224	16225	16226	16227	16228	16229
16230	16231	16232	16233	16234	16235	16236	16237	16258	16259	16260	16261	16262	16263	16264
16265	16266	16267	16268	16269	16270	16271	16272	16273	16274	16275	16276	16277	16278	16279
16302	16303	16304	16305	16306	16307	16308	16309	16310	16311	16312	16313	16314	16315	16316
16317	16318	16319	16320	16321	16322	16323	16341	16342	16343	16344	16345	16346	16347	16348
16349	16350	16351	16352	16353	16354	16355	16356	16357	16358	16359	16360	16361	16362	16379
16380	16381	16382	16383	16384	16385	16386	16387	16388	16389	16390	16391	16392	16393	16394
16395	16396	16397	16398	16399	16400	16423	16424	16425	16426	16427	16428	16429	16430	16431
16432	16433	16434	16435	16436	16437	16438	16439	16440	16441	16442	16443	16444	16463	16464
16465	16466	16467	16468	16469	16470	16471	16472	16473	16474	16475	16476	16477	16478	16479
16480	16481	16482	16483	16484	16502	16503	16504	16505	16506	16507	16508	16509	16510	16511
16512	16513	16514	16515	16516	16517	16518	16519	16520	16521	16522	16523	16538	16539	16540
16541	16542	16543	16544	16545	16546	16547	16548	16549	16550	16551	16552	16553	16554	16555
16556	16557	16558	16559	16574	16575	16576	16577	16578	16579	16580	16581	16582	16583	16584
16585	16586	16587	16588	16589	16590	16591	16592	16593	16594	16595	16612	16613	16614	16615
16616	16617	16618	16619	16620	16621	16622	16623	16624	16625	16626	16627	16628	16629	16630
16631	16632	16633	16658	16659	16660	16661	16662	16663	16664	16665	16666	16667	16668	16669
16670	16671	16672	16673	16674	16675	16676	16677	16678	16679	16703	16704	16705	16706	16707
16708	16709	16710	16711	16712	16713	16714	16715	16716	16717	16718	16719	16720	16721	16722
16723	16724	16744	16745	16746	16747	16748	16749	16750	16751	16752	16753	16754	16755	16756
16757	16758	16759	16760	16761	16762	16763	16764	16765	16787	16788	16789	16790	16791	16792
16793	16794	16795	16796	16797	16798	16799	16800	16801	16802	16803	16804	16805	16806	16807
16808	16825	16826	16827	16828	16829	16830	16831	16832	16833	16834	16835	16836	16837	16838
16839	16840	16841	16842	16843	16844	16845	16846	16866	16867	16868	16869	16870	16871	16872
16873	16874	16875	16876	16877	16878	16879	16880	16881	16882	16883	16884	16885	16886	16887
16909	16910	16911	16912	16913	16914	16915	16916	16917	16918	16919	16920	16921	16922	16923
16924	16925	16926	16927	16928	16929	16930	16947	16948	16949	16950	16951	16952	16953	16954
16955	16956	16957	16958	16959	16960	16961	16962	16963	16964	16965	16966	16967	16968	16988
16989	16990	16991	16992	16993	16994	16995	16996	16997	16998	16999	17000	17001	17002	17003
17004	17005	17006	17007	17008	17009	17028	17029	17030	17031	17032	17033	17034	17035	17036
17037	17038	17039	17040	17041	17042	17043	17044	17045	17046	17047	17048	17049	17067	17068
17069	17070	17071	17072	17073	17074	17075	17076	17077	17078	17079	17080	17081	17082	17083
17084	17085	17086	17087	17088	17107	17108	17109	17110	17111	17112	17113	17114	17115	17116
17117	17118	17119	17120	17121	17122	17123	17124	17125	17126	17127	17128	17144	17145	17146
17147	17148	17149	17150	17151	17152	17153	17154	17155	17156	17157	17158	17159	17160	17161
17162	17163	17164	17165	17181	17182	17183	17184	17185	17186	17187	17188	17189	17190	17191
17192	17193	17194	17195	17196	17197	17198	17199	17200	17201	17202	17218	17219	17220	17221
17222	17223	17224	17225	17226	17227	17228	17229	17230	17231	17232	17233	17234	17235	17236
17237	17238	17239	17254	17255	17256	17257	17258	17259	17260	17261	17262	17263	17264	17265
17266	17267	17268	17269	17270	17271	17272	17273	17274	17275	17291	17292	17293	17294	17295
17296	17297	17298	17299	17300	17301	17302	17303	17304	17305	17306	17307	17308	17309	17310
17311	17312	17327	17328	17329	17330	17331	17332	17333	17334	17335	17336	17337	17338	17339
17340	17341	17342	17343	17344	17345	17346	17347	17348	17364	17365	17366	17367	17368	17369
17370	17371	17372	17373	17374	17375	17376	17377	17378	17379	17380	17381	17382	17383	17384
17385	17403	17404	17405	17406	17407	17408	17409	17410	17411	17412	17413	17414	17415	17416
17417	17418	17419	17420	17421	17422	17423	17424	17443	17444	17445	17446	17447	17448	17449
17450	17451	17452	17453	17454	17455	17456	17457	17458	17459	17460	17461	17462	17463	17464

17478	17479	17480	17481	17482	17483	17484	17485	17486	17487	17488	17489	17490	17491	17492
17493	17494	17495	17496	17497	17498	17499	17515	17516	17517	17518	17519	17520	17521	17522
17523	17524	17525	17526	17527	17528	17529	17530	17531	17532	17533	17534	17535	17536	17554
17555	17556	17557	17558	17559	17560	17561	17562	17563	17564	17565	17566	17567	17568	17569
17570	17571	17572	17573	17574	17575	17592	17593	17594	17595	17596	17597	17598	17599	17600
17601	17602	17603	17604	17605	17606	17607	17608	17609	17610	17611	17612	17613	17628	17629
17630	17631	17632	17633	17634	17635	17636	17637	17638	17639	17640	17641	17643	17644	17645
17646	17647	17648	17649	17650	17669	17670	17671	17672	17673	17674	17675	17676	17677	17678
17679	17680	17681	17682	17684	17685	17686	17687	17688	17689	17690	17691	17713	17714	17715
17716	17717	17718	17719	17720	17721	17722	17723	17724	17725	17726	17728	17729	17730	17731
17732	17733	17734	17735	17757	17758	17759	17760	17761	17762	17763	17764	17765	17766	17767
17768	17769	17770	17772	17773	17774	17775	17776	17777	17778	17779	17804	17805	17806	17807
17808	17809	17810	17811	17812	17813	17814	17815	17816	17817	17819	17820	17821	17822	17823
17824	17825	17826	17845	17846	17847	17848	17849	17850	17851	17852	17853	17854	17855	17856
17857	17858	17860	17861	17862	17863	17864	17865	17866	17867	17886	17887	17888	17889	17890
17891	17892	17893	17894	17895	17896	17897	17898	17899	17901	17902	17903	17904	17905	17906
17907	17908	17929	17930	17931	17932	17933	17934	17935	17936	17937	17938	17939	17940	17941
17942	17944	17945	17946	17947	17948	17949	17950	17951	17972	17973	17974	17975	17976	17977
17978	17979	17980	17981	17982	17983	17984	17985	17987	17988	17989	17990	17991	17992	17993
17994	18019	18020	18021	18022	18023	18024	18025	18026	18027	18028	18029	18030	18031	18032
18034	18035	18036	18037	18038	18039	18040	18041	18059	18060	18061	18062	18063	18064	18065
18066	18067	18068	18069	18070	18071	18072	18074	18075	18076	18077	18078	18079	18080	18081
18100	18101	18102	18103	18104	18105	18106	18107	18108	18109	18110	18111	18112	18113	18115
18116	18117	18118	18119	18120	18121	18122	18143	18144	18145	18146	18147	18148	18149	18150
18151	18152	18153	18154	18155	18156	18158	18159	18160	18161	18162	18163	18164	18165	18187
18188	18189	18190	18191	18192	18193	18194	18195	18196	18197	18198	18199	18200	18202	18203
18204	18205	18206	18207	18208	18209	18231	18232	18233	18234	18235	18236	18237	18238	18239
18240	18241	18242	18243	18244	18246	18247	18248	18249	18250	18251	18252	18253	18278	18279
18280	18281	18282	18283	18284	18285	18286	18287	18288	18289	18290	18291	18293	18294	18295
18296	18297	18298	18299	18300	18319	18320	18321	18322	18323	18324	18325	18326	18327	18328
18329	18330	18331	18332	18334	18335	18336	18337	18338	18339	18340	18341	18360	18361	18362
18363	18364	18365	18366	18367	18368	18369	18370	18371	18372	18373	18375	18376	18377	18378
18379	18380	18381	18382	18405	18406	18407	18408	18409	18410	18411	18412	18413	18414	18415
18416	18417	18418	18420	18421	18422	18423	18424	18425	18426	18427	18448	18449	18450	18451
18452	18453	18454	18455	18456	18457	18458	18459	18460	18461	18463	18464	18465	18466	18467
18468	18469	18470	18495	18496	18497	18498	18499	18500	18501	18502	18503	18504	18505	18506
18507	18508	18510	18511	18512	18513	18514	18515	18516	18517	18536	18537	18538	18539	18540
18541	18542	18543	18544	18545	18546	18547	18548	18549	18550	18551	18552	18553	18554	18555
18556	18557	18576	18577	18578	18579	18580	18581	18582	18583	18584	18585	18586	18587	18588
18589	18590	18591	18592	18593	18594	18595	18596	18597	18618	18619	18620	18621	18622	18623
18624	18625	18626	18627	18628	18629	18630	18631	18632	18633	18634	18635	18636	18637	18638
18639	18660	18661	18662	18663	18664	18665	18666	18667	18668	18669	18670	18671	18672	18673
18674	18675	18676	18677	18678	18679	18680	18681	18704	18705	18706	18707	18708	18709	18710
18711	18712	18713	18714	18715	18716	18717	18718	18719	18720	18721	18722	18723	18724	18725
18743	18744	18745	18746	18747	18748	18749	18750	18751	18752	18753	18754	18755	18756	18757
18758	18759	18760	18761	18762	18763	18764	18785	18786	18787	18788	18789	18790	18791	18792
18793	18794	18795	18796	18797	18798	18799	18800	18801	18802	18803	18804	18805	18806	18830
18831	18832	18833	18834	18835	18836	18837	18838	18839	18840	18841	18842	18843	18844	18845
18846	18847	18848	18849	18850	18851	18875	18876	18877	18878	18879	18880	18881	18882	18883
18884	18885	18886	18887	18888	18889	18890	18891	18892	18893	18894	18895	18896	18922	18923
18924	18925	18926	18927	18928	18929	18930	18931	18932	18933	18934	18935	18936	18937	18938
18939	18940	18941	18942	18943	18961	18962	18963	18964	18965	18966	18967	18968	18969	18970
18971	18972	18973	18974	18975	18976	18977	18978	18979	18980	18981	18982	19009	19010	19011
19012	19013	19014	19015	19016	19017	19018	19019	19020	19021	19022	19023	19024	19025	19026

19027	19028	19029	19030	19048	19049	19050	19051	19052	19053	19054	19055	19056	19057	19058
19059	19060	19061	19062	19063	19064	19065	19066	19067	19068	19069	19087	19088	19089	19090
19091	19092	19093	19094	19095	19096	19097	19098	19099	19100	19101	19102	19103	19104	19105
19106	19107	19108	19135	19136	19137	19138	19139	19140	19141	19142	19143	19144	19145	19146
19147	19148	19149	19150	19151	19152	19153	19154	19155	19156	19171	19172	19173	19174	19175
19176	19177	19178	19179	19180	19181	19182	19183	19184	19185	19186	19187	19188	19189	19190
19191	19192	19210	19211	19212	19213	19214	19215	19216	19217	19218	19219	19220	19221	19222
19223	19225	19226	19227	19228	19229	19230	19231	19232	19253	19254	19255	19256	19257	19258
19259	19260	19261	19262	19263	19264	19265	19266	19268	19269	19270	19271	19272	19273	19274
19275	19297	19298	19299	19300	19301	19302	19303	19304	19305	19306	19307	19308	19309	19310
19312	19313	19314	19315	19316	19317	19318	19319	19341	19342	19343	19344	19345	19346	19347
19348	19349	19350	19351	19352	19353	19354	19356	19357	19358	19359	19360	19361	19362	19363
19388	19389	19390	19391	19392	19393	19394	19395	19396	19397	19398	19399	19400	19401	19403
19404	19405	19406	19407	19408	19409	19410	19428	19429	19430	19431	19432	19433	19434	19435
19436	19437	19438	19439	19440	19441	19443	19444	19445	19446	19447	19448	19449	19450	19468
19469	19470	19471	19472	19473	19474	19475	19476	19477	19478	19479	19480	19481	19483	19484
19485	19486	19487	19488	19489	19490	19509	19510	19511	19512	19513	19514	19515	19516	19517
19518	19519	19520	19521	19522	19524	19525	19526	19527	19528	19529	19530	19531	19550	19551
19552	19553	19554	19555	19556	19557	19558	19559	19560	19561	19562	19563	19565	19566	19567
19568	19569	19570	19571	19572	19591	19592	19593	19594	19595	19596	19597	19598	19599	19600
19601	19602	19603	19604	19606	19607	19608	19609	19610	19611	19612	19613	19636	19637	19638
19639	19640	19641	19642	19643	19644	19645	19646	19647	19648	19649	19651	19652	19653	19654
19655	19656	19657	19658	19680	19681	19682	19683	19684	19685	19686	19687	19688	19689	19690
19691	19692	19693	19695	19696	19697	19698	19699	19700	19701	19702	19727	19728	19729	19730
19731	19732	19733	19734	19735	19736	19737	19738	19739	19740	19742	19743	19744	19745	19746
19747	19748	19749	19767	19768	19769	19770	19771	19772	19773	19774	19775	19776	19777	19778
19779	19780	19782	19783	19784	19785	19786	19787	19788	19789	19807	19808	19809	19810	19811
19812	19813	19814	19815	19816	19817	19818	19819	19820	19822	19823	19824	19825	19826	19827
19828	19829	19849	19850	19851	19861	19862	19865	19866	19867	19868	19869	19870	19871	19872
19874	19875	19876	19877	19878	19879	19880	19881	19882	19883	19885	19886	19887	19888	19889
19891	19892	19893	19894	19895	19897	19898	19899	19900	19902	19903	19904	19906	19907	19908
19909	19910	19911	19913	19914	19915	19917	19918	19919	19920	19921	19922	19924	19925	19926
19927	19928	19930	19931	19932	19934	19935	19936	19938	19939	19940	19942	19943	19944	19945
19946	19947	19948	19949	19951	19952	19953	19954	19956	19957	19958	19960	19961	19962	19965
19966	19968	19969	19970	19971	19972	19973	19974	19975	19978	19979	19980	19981	19982	19983
19984	19985	19988	19989	19990	19991	19992	19993	19994	19995	19998	19999	20000	20001	20002
20003	20004	20005	20008	20009	20010	20011	20014	20015	20016	20018	20019	20020	20021	20023
20024	20025	20028	20083	20100	20155	20163	20171	20172	20173	20174	20175	20178	20179	20180
20181	20182	20183	20184	20187	20188	20189	20190	20191	20192	20193	20194	20195	20198	20199
20200	20201	20203	20204	20205	20206	20207	20208	20209	20212	20213	20214	20215	20216	20217
20220	20221	20222	20223	20224	20225	20226	20229	20230	20231	20232	20233	20234	20235	20238
20239	20240	20241	20242	20243	20246	20247	20248	20249	20250	20253	20254	20255	20256	20257
20260	20261	20262	20263	20264	20265	20266	20267	20270	20271	20272	20274	20290	20302	20340
20369	20381	20411	20412	20413	20414	20415	20417	20418	20420	20421	20423	20424	20425	20426
20427	20428	20429	20431	20432	20433	20434	20435	20436	20438	20439	20440	20441	20442	20443
20444	20447	20448	20449	20450	20451	20452	20455	20456	20457	20458	20459	20460	20461	20464
20465	20466	20467	20468	20469	20470	20471	20474	20475	20476	20477	20478	20479	20480	20483
20484	20485	20486	20487	20488	20489	20490	20493	20494	20495	20496	20497	20498	20499	20500
20503	20504	20505	20506	20507	20508	20509	20512	20513	20514	20515	20516	20517	20520	20521
20522	20523	20524	20525	20526	20529	20530	20531	20533	20534	20535	20536	20537	20538	20539
20542	20543	20544	20545	20546	20547	20550	20551	20552	20553	20554	20555	20556	20557	20559
20560	20561	20563	20571	20583	20584	20588	20589	20590	20591	20592	20593	20594	20595	20596
20597	20600	20601	20602	20603	20604	20605	20606	20607	20609	20610	20611	20612	20613	20614
20617	20618	20619	20620	20621	20622	20623	20624	20626	20627	20628	20629	20630	20631	20632

```
20633  20635  20636  20637  20638  20639  20640  20643  20653  20671  20672  20674  20675  20677  20678
20680  20681  20682  20683  20684  20685  20688  20689  20691  20692  20694  20695  20697  20698  20699
20700  20701  20702  20703  20704  20705  20707  20708  20709  20710  20712  20713  20714  20715  20716
20717  20718  20720  20721  20722  20723  20725  20726  20727  20728  20729  20731  20732  20733  20735
20736  20737  20739  20740  20741  20744  20745  20747  20748  20750  20751  20752  20753  20754  20755
20756  20757  20758  20759  20760  20761  20762  20763  20764  20765  20768  20776  20793  20794  20797
20798  20801  20802  20805  20806  20807  20808  20809  20810  20813  20814  20817  20818  20821  20822
20825  20826  20827  20828  20829  20830  20831  20832  20833  20836  20837  20838  20839  20841  20842
20845  20846  20849  20850  20851  20853  20855  20856  20857  20858  20859  20860  20861  20862  20863
20864  20865  20869  20870  20871  20872  20873  20874  20875  20876  20877  20878  20879  20882  20883
20885  20886  20887  20888  20889  20891  20892  20894  20895  20897  20898  20900  20901  20902  20903
20904  20905  20906  20907  20909  20910  20911  20912  20913  20916  20917  20920  20921  20922  20923
20924  20928  20929  20930  20931  20932  20933  20936  20937  20938  20939  20940  20941  20944  20954
20983  20984  20985  20986  20987  20989  20990  20992  20993  20995  20996  20997  20998  20999  21002
21013  21058  21059  21062  21063  21066  21067  21070  21071  21074  21075  21076  21077  21078  21079
21082  21083  21084  21085  21086  21087  21088  21089  21090  21091  21092  21093  21096  21097  21099
21100  21101  21102  21104  21105  21106  21107  21108  21109  21111  21112  21113  21114  21117  21118
21120  21121  21122  21123  21124  21125  21126  21127  21128  21129  21130  21131  21132  21133  21134
21137  21138  21140  21141  21142  21143  21144  21145  21146  21147  21148  21149  21150  21153  21154
21155  21156  21158  21159  21160  21161  21164  21165  21166  21167  21169  21170  21171  21172  21174
21175  21177  21178  21180  21181  21182  21183  21186  21262  21263  21264  21265  21266  21492  21493
21494  21495  21515  21516  21517  21518  21519  21520  21522  21557  21561  21562
```

ERRORS DETECTED: 0

*CZKEEC,CZKEEC/CRF/NL:TOC=CZKEEC.SML,CZKEEC.P11
RUN-TIME: 54 77 13 SECONDS
CORE USED: 37K